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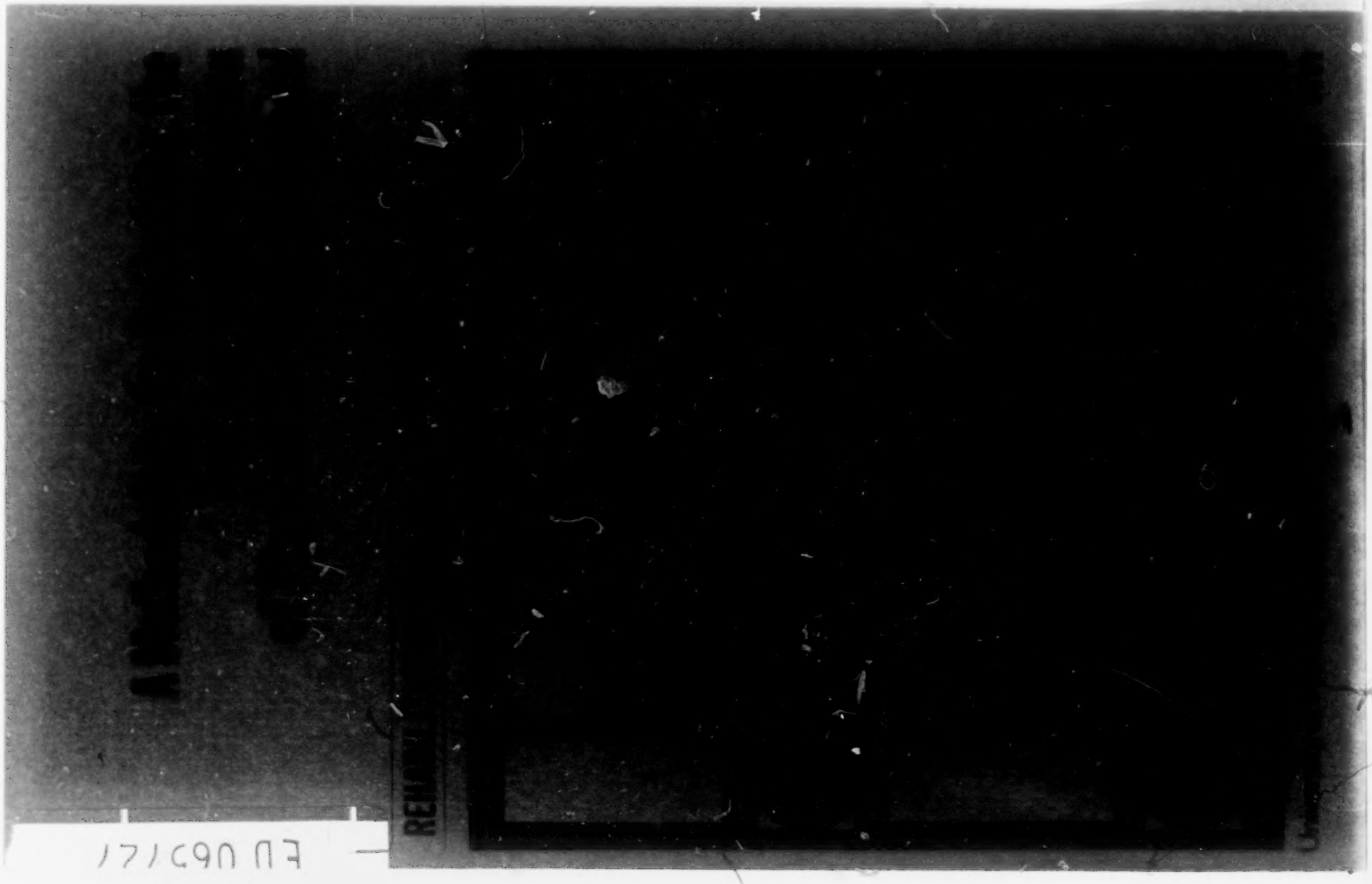
ABSTRACT

A method for analyzing the work in a department of physical therapy was devised and applied in a teaching hospital. Physical therapists, trained as observer-investigators, helped refine the coding system and were able to reliably record job behavior in the physical therapy department. The nature of the therapist's and aide's job was described and implications for physical therapy practice and academic preparation drawn. Therapists' judgments provided a basis for describing tasks which might readily be incorporated into the work of a trained physical therapy assistant. (Author)



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A method for analyzing the work in a department of physical therapy was devised and applied in a teaching hospital. Physical therapists, trained as observer-investigators, helped refine the coding system and were able to reliably record job behavior in the physical therapy department. The nature of therapist's and aide's job was described and implications for physical therapy practice and academic preparation drawn. Therapists' judgments provided a basis for describing tasks which might readily be incorporated into the work of a trained physical therapy assistant.

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A Methodology for Optimizing the Training and Utilization of Physical Therapy Personnel

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and
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Preface

IN 1967, THE UNIVERSITY OF FLORIDA Regional Rehabilitation Research Institute selected for its core research program personnel utilization problems in rehabilitation services. Because of the limited resources available it was decided to focus upon research which held promise for contributing to the effective utilization of support personnel in the fields of occupational therapy, physical therapy and rehabilitation counseling. It was recognized that in each of these three professional areas some attempts were underway to use supportive personnel, but it was thought desirable to initiate a program of systematic study of problems related to their use. It was also expected that studies in these professions would have significance for the professional level worker as well as the support staff in new roles.

Physical therapy was chosen as the first profession to study. It seemed most timely since the American Physical Therapy Association had a committee studying the problems of preparing and using physical therapy assistants. Also, programs were being established to prepare individuals at the Associate of Arts degree level to work in physical therapy. The staff of the APTA and the University of Florida appeared interested in seeing such research done and cooperating in its accomplishment.

This pilot study would not have been possible without the advice, assistance, and cooperation of Miss Barbara C. White, Director of the UF Department of Physical Therapy and Miss Martha Wroe, Chief Physical Therapist for the UF Health Center. The teaching staff, especially Miss Thelma Holmes, Miss Norma Fisher and Mr. Fred Rutan, provided many helpful suggestions in developing the Physical Therapy Observation Schedule. The physical therapists and PT aides in the clinic were most patient throughout the period during which video tapes were being filmed for training and reliability purposes as well as during the five weeks of data collection.

We are especially indebted to the four physical therapists who persevered with us in refining the research procedures and who worked faithfully and arduously in making the observations for the study. They were Mrs. Sarah Bowman, Mrs. Mary G. Kapicak, Miss Rosemary Chambers and Mrs. Marilyn Nelson. Mrs. Nelson also helped to develop and refine the basic instrument as well as monitor the data collection for us.

April 1, 1970

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Introduction

THE DEVELOPMENT AND TESTING of a job analysis procedure for studying physical therapy services was completed to permit future investigations of a wide range of personnel utilization problems. This paper describes the rationale and procedures followed in (1) devising the basic job analysis tool, (2) preparing the observers to record the data, (3) testing the reliability of the instrument as used by these observers, and (4) an analysis and summary of sample data which records the work behavior of a physical therapy staff in a single facility. Thus, this first report presents the potentialities of a special method for studying physical therapy services complete with examples based on a small sample of real data. Lastly, a computerized decision-making technique is provided whereby all available data can be pooled to evaluate and test alternative courses of action.

The analysis of the data collected during a five week period at the J. Hillis Miller Health Center for the University of Florida includes

1. an enumeration of the *tasks* performed in that physical therapy service,
2. a list of the *tasks* and *activities* which, according to the judgments of those performing them, might reasonably be assigned to assistants or aides,
3. a comparison of the study data and the preliminary statements of the Committee on Supportive Personnel of the American Physical Therapy Association Committee and the Florida State Department of Education regarding the roles and functions of physical therapy assistants, and
4. an example of one method whereby a facility could estimate its future personnel requirements and determine an optimal staffing pattern based upon the availability of the different levels of personnel.

Future investigations, using a much larger amount of data from a

representative sample of physical therapy facilities, will attempt to provide general solutions to the above as well as

1. an identification of latent *activity* units (sets of tasks which tend to always be performed in the same sequence as, for example, work patterns),
2. suggest alternative curricula and performance standards that might be used to train support personnel effectively and efficiently,
3. specify the most probable impact upon training programs, hospitals, rehabilitation centers, and physical therapists for each of the alternative curricula, and
4. provide alternative recommendations for standardized job training, performance evaluation, and licensing that will maximize the delivery of service while maintaining or exceeding current medical standards.

NEED FOR THE STUDY

The demand for health and rehabilitation services is expected to continue to expand in the decade ahead. The gap between the supply and demand of persons fully qualified to function in the various health professions has not been narrowing. The 1968 Health Manpower Report (National Center for Health Statistics, 1968) shows that 39% more physical therapists and 23% more physical therapy assistants were needed in order to meet the demand for services for 1968. The report concludes with the observation that "future growth appears to hold little promise for narrowing the gap between the need for personnel and the personnel available, at least under present educational outputs and the use of personnel."

Although three additional baccalaureate degree programs have been established since 1968 and four others are being developed, there does not appear to be good reason to expect patient needs to be met by the available supply of trained physical therapists or the new graduates from these programs. At this time, it appears both feasible and necessary to plan for the redistribution of the function and the responsibilities of many health workers, including physical therapists. Committees of the American Physical Therapy Association have been studying the problems of training and utilizing supportive personnel for many years. In July, 1967, its House of Delegates approved and charted the development of a new occupational category, "Physical Therapy Assistants". As Blood (1968) has indicated, the expansion of technical knowledge

has increased the range of professional practices for physical therapists as well as other fields. These developments have emphasized the need to study existing methods for the delivery of health care including experimenting with new ways of using supportive personnel.

With the increasing acceptance of the role of the assistant in physical therapy services and the inauguration of eight academic programs in junior colleges (ten more are in the planning stages) to prepare such personnel, the need for job analysis data to guide the curriculum planning seems to be evident. The recently established programs have been based on professional judgments regarding the relevance of curriculum content to available job description data. An outstanding example of a thorough approach to planning and establishment of an assistancy program is described by Fenderson and Larson (1968). Although the program development at St. Mary's Junior College in Minneapolis, Minnesota was carefully planned, the curriculum was based upon available job descriptions and the professional judgments of its advisory committee and consultants. Thus, it is without a clear objective linkage to the work of the physical therapy service which intensive job analysis can provide.

Studies of the roles and functions of the physical therapist have been undertaken (McDaniel, 1964, Bright, 1962, and Anderson, et al., 1965), but there has been no thorough physical therapy job analysis scheme devised which would provide an accurate description of a task performed by the staff. Killen, et al., (*PT*, 1968, pp. 1289-93) report that task analysis studies of three rehabilitation related occupations are being undertaken but no studies have been cited in the literature.

Study Methods and Instrumentation

DATA WERE COLLECTED by trained observer-investigators using a coding scheme developed at the Institute. Briefly, each observer-investigator was given a set of dates, times (to the minute) and persons to be observed during the five week data collection period (November-December, 1969). Just prior to each starting time, the observer checked her equipment (clip board, stop watches, coding table and forms, etc.) and located her assigned staff person. If the physical therapist or aide to be observed that day was unavailable, a randomization table (appendix IV) was provided whereby another subject could be selected without biasing the data collection in any discernible manner. At the scheduled time, the observer-investigator began following her assigned subject, encoding the nature-duration-complexity-sequence of each different task performed by that person during the next two-hour period.

INSTRUMENTATION

To collect data about the work of the physical therapist, a job-analysis tool called the Physical Therapy Observation Schedule (PTOS) was developed. This tool is a highly structured language for recording events in physical therapy clinics. It is based upon significant tasks and modalities that were identified through a content analysis of selected physical therapy and medical tests (appendix I).

In using the PTOS, the observer always describes the tasks performed by the staff member that is being followed. For each task (which begins and ends at the observer's judgment), the following information is recorded:

1. ACTION. What is being done—28 terms grouped in three categories, i.e., *People, Data* and *Things*. From the

perspective of the observer, a task statement might be "the physical therapist (I'm observing) is ACTION (doing something) . . . ." One term is chosen.

2. OBJECT. Type of ACTION in progress—47 terms, grouped by *people, data* and *thing* categories, which can be used to expand a description of the ACTION, e.g., "the physical therapist (I'm observing) is PREPARING (the ACTION) a BANDAGE (the OBJECT) . . . ." One term is chosen.
3. PERSON. Individuals involved other than staff member being observed—16 categories and combinations of individuals to, for, or with whom: the ACTION is carried out, e.g., "the physical therapist (I'm observing) is PREPARING (ACTION) a BANDAGE (OBJECT) for an AIDE (PERSON) . . . ." This category enumerates the individuals involved in the task being observed. This does not include the staff member under direct observation who, of course, must always be present. One or more terms are chosen.
4. MODE. The 33 basic divisions of physical therapy treatment. One term is chosen.
5. LEVEL. The staff member's judgment of the complexity of the task just completed. That is, at the completion of each task (when it is being coded) the observer asks, "What is the lowest level of staff member you would have permitted to perform the task you just completed with the patient (if applicable) you just helped . . . ?" This judgment is on a 5-point scale: (1) physical therapist, (3) assistant, and (5) aide.

In addition to the above, the duration of each task was recorded in minutes and hundredths of a minute. The recording procedure also indicates the sequence in which it occurred.

The following data were collected for each two-hour observation period as a whole: (1) hospital identifier, (2) LEVEL of person being observed (physical therapist or aide), (3) observer identifier, (4) date, (5) starting hour and minute, and (6) staff name and identifier. A separate PTOS form was completed for each patient treated during the observation period. In addition to the other identifying information, it included: (1) patient identifier, (2) age, (3) number previous visits (4) sex, (5) in- or out-patient, (6) referring department, and (7) admission cause-history. Figure 1 is a copy of the coding table used by the observers as part of their equipment. Figure 2 is a reproduction of a PTOS coding form.

ACTION (1)	OBJECT (2)	PERSON (3)
PEOPLE	100-ACTION/TECHNIQUE*	100-PATIENT
110-ASSISTS	110-EXERCISES	010-PT-AIDE
121-PREPARES P	111-BREATHING	011-AIDE
122-TRANSPORTS P	112-MUSCLE RE-EDUC.	012-PT-PT
131-HANDLES	113-RELAXATION	013-PT
141-COMMUNICATES	114-STRENGTH. GEN'L	014-STUDENT
142-PARTICIPATES	115-BALANCING	015-AIDE-AIDE
143-OVERSEES	116-AMBULATION	016-ASSISTANT
150-EVALUATES	117-DEVELOPMENTAL	017-PT-ASST
161-SUPERVISES	118-POSTURE	018-ASST-ASST
162-TEACHES	119-SPEC.STRENGTH	019-ASST-AIDE
163-CONSULTS	120-FIRST AID	020-PHYSICIAN
170-DIRECTS	130-POSITIONING	021-NURSE
199-OTHER*	140-BANDAGING	022-OT
	150-TRANSPORTATION	023-OTHER HRP
999-TRAVELS	160-SELF CARE	030-CLERICAL
	170-PATIENT RESPONSE	031-RECEPTIONIST
	180-PROFESSIONAL*	032-SECRETARY
	199-OTHER*	040-RELATIVE
DATA	200-PROGRESS NOTES	060-ALONE
	201-INITIAL	099-OTHER*
210-COPIES	202-FINAL	MODE (4)
220-RECORDS	210-REPORT	01-THERMOTHERAPY
230-READS	211-STATISTICAL	02-CRYOTHERAPY
240-WRITES	212-NARRATIVE	03-DIATHERMY MW
250-PLANS	220-RECORDS	04-DIATHERMY SW
299-OTHER*	221-ATTENDANCE	05-HOT PACK
	222-APPOINTMENT	06-INFRARED
	223-MEDICAL CHART	07-PARAFFIN
	230-MESSAGE	08-ULTRASOUND
	240-TREATMENT PROGRAM	09-ULTRAVIOLET
	250-INVENTORY	10-HYDROTHERAPY
	260-EVALUATION FORM	11-CONTRAST BATH
	270-INSTRUCTIONS	12-HUBBARD TANK
	299-OTHER*	13-WHIRLPOOL
THINGS	310-EQUIPMENT	20-EVALUATION
	320-PROSTHESIS	21-ROM
310-PREPARES T	330-ADJUNCT	22-M.M.T.
311-TRANSPORTS T	340-BANDAGE	23-ELECTRODIAG.
320-OPERATES	350-ASSISTIVE DEVICE	30-INSTRUCTION
330-CONSTRUCTS	351-BRACE	31-GEN'L EXER.
340-ADJUSTS	352-CRUTCH	32-THER. EXER.
350-SETS-UP	353-WALKER	33-GAIT TRAIN.
360-APPLIES	354-CANE	34-A.D.L.
399-OTHER*	355-WHEELCHAIR	35-AMPUTEE
	360-PHYSICAL PLANT	40-OTHER MEDICAL
	399-OTHER*	41-TRACTION
	LEVEL (5)	42-ELEC. STIM.
*EXPLANATORY	1-RPT	43-POST. DRAIN.
NOTE REQUIRED	2-ASST*	44-TILT-TABLE
	3-ASST	45-MASSAGE
	4-AIDE*	46-PASS. ROM
	5-AIDE	50-CLERICAL*
		60-PROFESSIONAL*
		99-OTHER*

Figure 1. Coding Table

HOSP. 1-RPT 5-AIDE OBSV DATE START TIME STAFF NAME_____
3-ASST 9-OTHER NUMB MO DAY YR HOUR MINUTE SOC SEC
[ ][ ] [ ] [ ][ ] [ ][ ] [ ] [ ][ ] [ ][ ] [ ][ ][ ]-[ ][ ]-[ ][ ][ ][ ]

PATIENT NUMBER AGE VISIT 1-MALE 1-INPAT REFER 1-OB/GYN 5-NEURO
2-FEM 2-OUTPAT DEPT 2-ORTHO 6-PEDIA
3-MEDIC 7-SURG
4-E/N/T 8-PSYCH
9-OTHER
[ ][ ][ ]-[ ][ ][ ][ ] [ ][ ] [ ][ ] [ ] [ ] [ ]

PATIENT NAME_____
DIAGNOSIS/HISTORY/OBJECTIVES_____

ACTION	OBJECT	PERSON	MODE	LEVEL	DURATION	COMMENTS	PAGE SEQ
[ ][ ][ ][ ]	[ ][ ][ ][ ]	[ ][ ][ ][ ]	[ ][ ]	[ ]	[ ][ ] [ ][ ]		[0|1]
[ ][ ][ ][ ]	[ ][ ][ ][ ]	[ ][ ][ ][ ]	[ ][ ]	[ ]	[ ][ ] [ ][ ]		[0|2]
[ ][ ][ ][ ]	[ ][ ][ ][ ]	[ ][ ][ ][ ]	[ ][ ]	[ ]	[ ][ ] [ ][ ]		[0|3]
[ ][ ][ ][ ]	[ ][ ][ ][ ]	[ ][ ][ ][ ]	[ ][ ]	[ ]	[ ][ ] [ ][ ]		[0|4]
[ ][ ][ ][ ]	[ ][ ][ ][ ]	[ ][ ][ ][ ]	[ ][ ]	[ ]	[ ][ ] [ ][ ]		[0|5]
[ ][ ][ ][ ]	[ ][ ][ ][ ]	[ ][ ][ ][ ]	[ ][ ]	[ ]	[ ][ ] [ ][ ]		[0|6]
[ ][ ][ ][ ]	[ ][ ][ ][ ]	[ ][ ][ ][ ]	[ ][ ]	[ ]	[ ][ ] [ ][ ]		[0|7]
[ ][ ][ ][ ]	[ ][ ][ ][ ]	[ ][ ][ ][ ]	[ ][ ]	[ ]	[ ][ ] [ ][ ]		[0|8]
[ ][ ][ ][ ]	[ ][ ][ ][ ]	[ ][ ][ ][ ]	[ ][ ]	[ ]	[ ][ ] [ ][ ]		[0|9]
[ ][ ][ ][ ]	[ ][ ][ ][ ]	[ ][ ][ ][ ]	[ ][ ]	[ ]	[ ][ ] [ ][ ]		[1|0]
[ ][ ][ ][ ]	[ ][ ][ ][ ]	[ ][ ][ ][ ]	[ ][ ]	[ ]	[ ][ ] [ ][ ]		[1|1]
[ ][ ][ ][ ]	[ ][ ][ ][ ]	[ ][ ][ ][ ]	[ ][ ]	[ ]	[ ][ ] [ ][ ]		[1|2]
[ ][ ][ ][ ]	[ ][ ][ ][ ]	[ ][ ][ ][ ]	[ ][ ]	[ ]	[ ][ ] [ ][ ]		[1|3]
[ ][ ][ ][ ]	[ ][ ][ ][ ]	[ ][ ][ ][ ]	[ ][ ]	[ ]	[ ][ ] [ ][ ]		[1|4]
[ ][ ][ ][ ]	[ ][ ][ ][ ]	[ ][ ][ ][ ]	[ ][ ]	[ ]	[ ][ ] [ ][ ]		[1|5]
[ ][ ][ ][ ]	[ ][ ][ ][ ]	[ ][ ][ ][ ]	[ ][ ]	[ ]	[ ][ ] [ ][ ]		[1|6]
[ ][ ][ ][ ]	[ ][ ][ ][ ]	[ ][ ][ ][ ]	[ ][ ]	[ ]	[ ][ ] [ ][ ]		[1|7]
[ ][ ][ ][ ]	[ ][ ][ ][ ]	[ ][ ][ ][ ]	[ ][ ]	[ ]	[ ][ ] [ ][ ]		[1|8]
[ ][ ][ ][ ]	[ ][ ][ ][ ]	[ ][ ][ ][ ]	[ ][ ]	[ ]	[ ][ ] [ ][ ]		[1|9]
[ ][ ][ ][ ]	[ ][ ][ ][ ]	[ ][ ][ ][ ]	[ ][ ]	[ ]	[ ][ ] [ ][ ]		[2|0]
[ ][ ][ ][ ]	[ ][ ][ ][ ]	[ ][ ][ ][ ]	[ ][ ]	[ ]	[ ][ ] [ ][ ]		[2|1]
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Figure 2. Coding Sheet

OBSERVER TRAINING

Flash cards and test. Each observer was initially furnished with a copy of the *PTOS Dictionary* (See appendix II) and a set of flash cards. The *Dictionary* provides a definition for each of the 129 terms used in the schedule by enumerating as many examples of each as possible (N=233). The flash cards were used as a training device to aid the observers in memorizing the definitions (N=129). This proved to be an easy task since the language of the *Dictionary* originally came from physical therapy and medical texts and was familiar to the observers. A test (see appendix III) comprising 81 out of 233 examples selected as a stratified random sample from the *Dictionary* was administered to all four observers. Given 30 minutes to select the proper codes for each test of the 81 items (i.e., examples selected from definitions), three observers got 96% (three wrong) and one got 100%.

Video tapes. In order to more adequately simulate actual field conditions and improve the reliability of the PTOS, a set of eleven one-hour video tapes of therapists, aides, and patients in the actual clinic situation was made. Eight of the one-hour tapes were used for training as follows: (1) each observer viewed one tape individually and encoded the tasks seen, (2) all of the observers convened as a group to review the same tape and adjudicate the coding differences until a consensus was derived, (3) steps 1, 2 above repeated for all eight tapes, (4) each observer individually viewed all eight tapes for a second time in three consecutive sessions and coded the events, (5) the observer group convened to discuss this coding (4 above) as compared to the previous group consensus (2, 3 above), and (6) reliability tests were conducted using the remaining tapes.

RELIABILITY TESTS

Two tests (one before and one after data collection) of the four observers' ability to reliably encode tasks were performed using video tape of actual and hypothetical patients to simulate a sample of the same audiovisual stimuli that were likely to be encountered during the data collection period. The pre-collection video tape test comprised eight sequences (47.2 minutes) and included thirty-five tasks as shown in table 1. The post collection video tape sequences are described in table 2.

Table 1. Pre-Collection Video Tape Sequences.

MODALITY	TYPE PATIENT	MINUTES	TASKS
1. Electrical Stimulation	actual	12.3	6
2. Paraffin bath	actual	5.8	6
3. Range of Motion Test	actual	11.0	7
4. Diathermy	hypothetical	3.0	4
5. Whirlpool	hypothetical	2.4	5
6. Clerical	hypothetical	1.7	3
7. Manual muscle test	actual	5.3	1
8. Manual muscle test	actual	5.6	1

Table 2. Post-Collection Video Tape Sequences.

MODALITY	PATIENT	MINUTES	TASKS
1. Other medical	actual	11.5	4
2. Whirlpool	actual	12.3	4
3. Professional	none	24.0	19
4. Activities of daily living	actual	14.7	8
5. Passive range of motion	actual	7.0	2
6. Therapeutic exercise	actual	14.0	11
7. Gait training	actual	10.1	10

The observers made four brief judgments and transferred three additional data to encode a single *task*. These seven items are:

I. Judgments
   1. Choose a single code describing the ACTION observed (N=28)
   2. Choose a single code describing the OBJECT (i.e., type) of ACTION observed (N=47)
   3. Choose a single code describing the MODE (*sic* Modality) in which the ACTION OBJECT should be classified (N=33)*
   4. Decide tnat the task has ended and the task event begun

II. Data Transfer
   1. Having decided that a task has ended (I 4 above), record the actual duration in minutes and hundredths
   2. Encode the people (staff and others) who participated in this task (PERSON)

III. 3. Record the staff member's judgment of the LEVEL (rating of the minimum level of qualification training the observed staff member feels is required to have performed the task just completed with the particular patient that was just treated, if any)

Reliability Measures

With the large number of possibilities (over 43,000) inherent in the coding scheme, any identical judgments on the part of the observers would be significantly different statistically from chance expectation. A more practical measure, and the one employed here, is to merely ask whether four trained individuals can watch a continuous stream of events and (a) decide that a *task* is beginning at some point in time, (b) decide that a *task* has ended at some point in time, and (c) label or encode the *task* with the same-similar three-part identifier. Essentially, what is being asked is whether these four observers can, at any moment in time, identically encode the event in front of them. Since the recording procedures were in hundredths of a minute for convenience in data processing, this unit was selected as the scaling for the reliability test.

The reliability measurement unit consists of *code in force* during time cut into discrete units of 0.10 minutes (i.e., 6 seconds per interval). That is, the first minute of the test comprises 10 intervals during which some task or tasks is (are) occurring. If one observer says that a single task occurred during these 10 intervals while a second reports that another task began in the last interval, there would be 9 intervals of perfect agreement and one of disagreement, i.e., two observers agreeing 90% of the time. Therefore, by comparing the code selected by each observer for some particular interval ($\frac{1}{10}$th of a minute) we can make a frequency count of the five possible occurrences: (a) four agreeing, (b) three agreeing, (c) two vs. two, (d) two vs. one vs. one, and (e) four different codes.

The only modification of this procedure was with respect to *transition points*, i.e., moments at which one task ended and another began. At this point the interval was enlarged to a maximum of 0.30 minutes (18 seconds). It was felt that if the observers could make the decision that set the transition point for a specific task within 18 seconds of each other that this should be considered close enough to be called *simultaneous*. Since this study is designed to aid in practical decision-making, there is little reason to be concerned with events taking less than a minute on the average, i.e., less than the time necessary for a more extensively trained professional to call an assistant to do the job for her. With this rationale, accuracy within $\pm$0.30 minutes (18 seconds) in measuring the duration of a task was judged sufficient. The judgments made by the observers during this larger time unit

(maximum of three intervals) were, therefore, recorded as simultaneous and identical for all 18 seconds (if indeed the same code was selected).

The results of four observers independently encoding the identical 47.2 minutes (472 intervals) of video tape *prior* to the data collection period are in table 3. Entries in the cells are frequencies while those in parentheses are cumulative row percentages reading left to right. For example, in 341 of the 472 intervals (72% of the time) all four observers chose the same ACTION, code. In 92 of the 472 intervals, three observers chose the same ACTION code. Thus, three or more observers chose the same code 92% of the time.

Table 3. Observer Agreement before Data Collection.

Category		Number of Observers Agreeing 4	3	2-2	2-1-1	None
ACTION	No.	341	92	23	9	7
	Cum. %*	(72%)	(92%)	(97%)	(99%)	(100%)
MODE	No.	450	14	8	0	0
	Cum. %	(95%)	(98%)	(100%)	(100%)	(100%)
ACTION MODE	No.	322	99	37	0	14
	Cum. %	(68%)	(89%)	(97%)	(97%)	(100%)
PERSON	No.	458	5	0	9	0
	Cum. %	(97%)	(98%)	(98%)	(100%)	(100%)
TRANSITION POINTS	No.	18	10	5	NA	NA
	Cum. %	(55%)	(85%)	(100%)		
OBJECT	No.	129	116†	20	197	10
	Cum. %	(27%)	(52%)	(56%)	(98%)	(100%)
ACTION-MODE & OBJECT	No.	115	99†	9	223	26
	Cum. %	(24%)	(45%)	(47%)	(95%)	(100%)

* The percentages represent the cumulative proportion of the codes for which there was agreement. Thus, the proportion of codes for which there was agreement among three observers also includes the percentage for which there was unanimity.
† Usable for explication purposes only.

A second reliability test was performed immediately after the data collection period was completed. Again, all four observers independently encoded identical video tape lasting 93.6 minutes (936 reliability intervals). The results of this second test appear in table 4.

For the purpose of this study, it was determined that the ACTION-MODE combination(s) (N=924) would be the basic unit of observation since it demonstrated a very good reliability (greater than 86% of the time, three or more observers agreeing) both before and after data collection. The observers' ability to

enumerate the persons present at any time is almost beyond question (greater than 96% of the time, three or more observers agreeing). As stated, the duration of any identified task is based

Table 4. Observer Agreement after Data Collection.

Code Category		Number of Observers Agreeing 4	3	2-2	2-1-1	None
ACTION	No.	656	225	18	37	0
	Cum. %	(70%)	(94%)	(96%)	(100%)	(100%)
MODE	No.	562	313	57	2	2
	Cum. %	(60%)	(93%)	(99%)	(99%)	(100%)
ACTION & MODE	No.	371	435	42	69	19
	Cum. %	(39%)	(86%)	(90%)	(97%)	(100%)
PERSON	No.	890	16	26	4	0
	Cum. %	(95%)	(96%)	(99%)	(100%)	(100%)
TRANSITION POINTS	No.	36 (62%)	13 (84%)	9 (100%)	NA	NA
OBJECT	No.	283	379	110	160	4
	Cum. %	(30%)	(70%)*	(82%)	(99%)	(100%)
ACTION-MODE & OBJECT	No.	245	384	93	183	31
		(26%)	(67%)*	(77%)	(96%)	(100%)

* Usable with reservations

upon the observers' judgments as to when it begins and when it ends, i.e., TRANSITION POINTS. This measure also meets a relatively high standard of reliability with three or more observers agreeing more than 84% of the time. The only weak spot in the PTOS technique appears to be the use of the OBJECT codes to explicate the N=924 ACTION MODE combinations. The pre-test showed 45% reliability (three or more observers agreeing) while the post-test resulted in a 67% agreement at that level. Since this would mean that the OBJECT code in combination with the ACTION MODE unit is likely to be correct only 60% of the time (a weighted average of 45% and 67%), it was decided to reserve its use to descriptive rather than computational reporting, i.e., for explaining ACTION MODE combinations that have high frequencies.

SAMPLING

Four hours of observations (two each in the morning and afternoon) were made for each of N=25 days (each weekday x 5) for a total of N=100 hours of data. An additional three days was also collected at the start of the study. However, without the knowledge of the observers, it was determined prior to data

collection that these data would not be used. These three days were designated as a shakedown period and, as such, considered to be potentially contaminated, i.e., by observer nervousness, and abnormal staff reactions until the novelty of the presence of a new person in the clinic wore off. The observers, who were licensed physical therapists themselves, wore their uniforms in order to seem as much as possible a natural part of the clinic and minimize this contamination. Other sampling specifications were as follows:

1. Two observers worked only mornings, two afternoons.
2. Each half day was divided into two equal parts, e.g., 8-10 a.m., and 10-12 a.m. Twelve of the 25 days were randomly assigned to one period, the other thirteen to the other.
3. Each observer was randomly assigned to one-half of the early periods and one-half of the late periods within their respective half day.
4. The nine staff members to be observed were randomly assigned to the first nine periods until all were used, then the process was repeated for the next nine periods, and so on for 25 days. In this way each staff member was to be observed for 10 or 12 hours (five or six two-hour periods out of a fifty). The master sampling schedule appears in appendix IV.

In order to provide for sickness or other problems that might prevent an observer from locating a particular staff member, a randomization table was provided for the former's use (appendix V). Using this guide, an observer was able to randomly select another staff member to follow if the assigned person was unavailable or could not be found. In point of fact, this device was used for 15 out of 50 two-hour observation periods without upsetting the sampling plan. Tabulations after the data collection provide the following information:

STAFF TYPE	NUMBER	% HOURS OBSERVED
PT	5(55%)	54
Aide	3(33%)	36
Director	1(11%)	10
	9(99%)*	100

*Rounding error

Results

AS INDICATED EARLIER, the data collected for this study may be used to secure tentative answers for a wide range of significant questions regarding the utilization of all levels of physical therapy personnel. In this regard, it is interesting to note the answers to the following questions:

1. How many and which of the 924 potential tasks (ACTION MODE combinations) are performed in clinic?
2. Which ACTIONS were found to occur most often?
3. Which modalities were used most often?
4. How did the typical therapist partition her work week?
5. What part of each task, if any, was judged by her as being potentially suitable for either an assistant or an aide?
6. What tasks did aides perform and how would their typical work week look if the therapists' judgments were used to change their job?
7. What do the therapists' judgments lead us to infer about the nature and composition of the assistants' job?
8. What would be a method of using this and other available information to develop and/or test complex decisions about training, utilization and policy?

A TYPICAL CLINIC WORK WEEK

Table 5 lists the 41 tasks (less than 5% of the total possible) which describe most (80.3%) of the services provided in the clinic during the pilot study. This proportion is equivalent to 284 out of 360 working hours for a nine-member staff. Tasks which accounted for less than 0.5% of the work week (less than 12 minutes per staff member) of the University of Florida Health Center Physical Therapy Clinic are not listed separately. These minor tasks tended to occur infrequently and with very short duration. In all, they account for only 9.1% of the work time while personal

activities required even more (12.6%, more than one out of every ten hours on the job).

Table 5. Performance of action mode tasks.
(6 Therapists and 3 Aides)

Action Mode[1]	Task Description	% of Wee.	req.	Average Minutes	Staff Hrs.
122-60	Transport P to and from clinic	10.5	475	4.7	37.1
240-60	Professional writing: progress				
240-50	notes and medical chart[2]	7.6	342	4.7	26.7
310-60	Prepare misc. equipment and physical plant	5.3	392	2.9	18.8
141-60	Communicates: P's progress, instructions, appointments	5.1	680	1.6	18.1
999-60	Travels to and from other clinics	4.5	284	3.3	15.8
131-32	Handles P during therapeutic exercise	4.3	202	4.5	15.1
161-32	Supervises P during therapeutic exercise	4.0	245	3.4	14.0
230-60	Read medical charts, etc.	2.8	205	2.9	9.9
199-99[3]	Other non-therapeutic but related activities	2.3	144	3.4	8.2
131-43	Handles P during postural drainage	2.3	29	17.0	8.2
161-33	Suprevises P during gait training	2.2	155	3.1	7.9
121-60	Prepares P for transportation to and from other clinics	2.2	209	2.3	7.9
141-99	Communicates with non PT staff and students	1.7	97	3.7	6.0
310-13	Prepare whirlpool	1.7	101	3.6	6.0
162-60	Teach non PT staff and patients	1.7	18	19.6	5.9
121-33	Prepare P for gait training	1.6	220	1.6	5.8
163-60	Consult with/for staff or physicians	1.6	108	3.2	5.8
121-32	Prepare P for therapeutic exercise	1.3	151	1.8	4.6
131-46	Handles P during Passive Range of Motion exercise	1.2	104	2.4	4.2
311-60	Transport misc. equipment	1.2	65	3.8	4.2
121-13	Prepare P for whirlpool	1.1	65	3.4	3.7
142-60	Participate in meetings	1.0	7	28.9	3.5
360-40	Apply adjuncts and bandages	0.9	43	4.5	3.2
162-32	Teach P therapeutic exercise	0.9	47	4.0	3.2
299-60	Other data handling activities	0.9	25	7.3	3.1
141-32	Communicate with P and relatives about therapeutic exercise	0.8	86	2.0	2.9
161-34	Teach activities of daily living	0.8	58	2.9	2.8
150-21	Evaluate Range of Motion	0.7	18	8.5	2.5
162-21	Teach Range of Motion	0.7	11	13.2	2.4
999-99	Travel (other)	0.7	40	3.6	2.4
131-13	Handles P in whirlpool	0.6	20	5.7	2.1
131-40	Handles P during other medical services	0.6	14	8.6	2.1
*62-33	Teach gait training	0.5	22	5.4	1.9

Action Mode[1]	Task Description	% of Week	Freq.	Average Minutes	Staff Hrs.
310-12	Prepare hubbard tank	0.5	22	5.3	1.9
162-43	Teach postural drainage	0.5	11	9.9	1.8
199-60	Other P related activities	0.5	40	2.7	1.8
220-60	Record P data	0.5	43	2.5	1.8
110-33	Assist during gait training	0.5	25	4.0	1.7
310-33	Prepare equipment for gait training	0.5	79	1.3	1.7
199-99[4]	OTHER (personal—level 9)	12.6	400	6.7	44.7
	All other tasks (therapeutic)	9.1	915	2.1	32.3
	TOTAL	100.0	6217	3.5	353.7
143-ALL	OVERSEE	9.4	342	5.8	33.1

1. See appendix II — Dictionary of the PTOS for definitions of ACTION-MODE.
2. The results of the PTOS reliability study indicated that the 240-50 code was used by one observer to indicate tasks which otherwise were classified 240-60. It was on this basis that the two codes were merged.
3. This code (199-99) is split into PT-RELATED and OTHER-PERSONAL categories. See both entries.
4. See explanation of this code in text following this table.

The data suggest that merely transporting the patients to a place where they can be treated accounts for more than 10% of the staff time (37.1 hours). The therapist's time in going to ward-bound patients takes another 4.5% (15.8 hours). Reading the patient's records and writing/talking about his progress/activities take about one-eighth 48 hours) of the physical therapists' service time. The preeminence of therapeutic exercise and medical treatments such as postural drainage and passive range of motion therapy in the University of Florida Physical Therapy Clinic are apparent. A summary of the tasks which require communications skills shows that a combination of the teaching, consulting, communicating, and supervising accounts for 21% (62.7 hours) of the staff time. Skill in oral communication, especially if one considers the continuing exchange among staff and patients as well as the formal communications among the health and health related professions personnel, seems to be quite an important factor in a physical therapy service.

As is apparent, the basic descriptive data permit a wide variety of interpretive comments. For the University of Florida Physical Therapy Department they provide a picture of how things were in the time period studied. If we assume that the data are representative of the work of the service, then this information provides a basis for making administrative decisions and would also have implications for the preparation and in-service training of staff employed in the clinic. Using the information in appendix VI

which relates each task to hospital departments that refer patients for physical therapy, other critical decisions could be made. For example, if some medical service was expected to expand, these data would enable the physical therapy staff to predict the most probable impact of this upon the clinic's work assignments and staffing needs.

OVERSEE

Among the tasks listed OVERSEE (143) deserves a few special comments. OVERSEE is used during those busy times when a therapist is working with one patient and is simultaneously watching or supervising another. In this case, it is equally unreasonable to claim that the therapist (a) spent one hour with the first patient and no time with the second, (b) spent one-half hour with each, or (c) spent one hour with each. To describe this special phenomenon, therefore, the term OVERSEE was devised, since in the above illustration, a second staff member would have been required if the therapist had not been able to supervise the second patient. This is too important a factor to overlook in manpower planning since it accounts for more than 9% (33 hours) of the work week. This is the equivalent of one additional person or a 10% increase in the total staff.

ACTIONS THAT THE STAFF TAKE

The distribution of staff time among the possible categories of ACTIONS is shown in table 6. Only one of the 29 ACTION codes included in the *PTOS Dictionary* is not found in the summary table. OTHER THINGS (399) was excluded because it did not occur during the more than 100 hours of recorded observation. It is particularly interesting to note that OTHER THINGS was not used by the observers since this is the catchall category for undefined equipment *things* oriented activities. In a way, this provides some small indication of the capacity of the PTOS to come up with a special name for each different event.

With few exceptions, the average duration of an ACTION, as defined by the PTOS, is less than four minutes long. Those of longer duration appear to reflect the activities of the department chief as she participated in meetings and planning sessions. Among the other ACTIONS which averaged more than five minutes were TEACHES and two activities related to record keeping i.e., COPIES (210) and OTHER DATA (299). In all, it would appear

Table 6. Performance of Action Tasks.

ACTION Task		Time Distribution			
No.	Description	% of Week	Frequency	Average Minutes	Staff Hrs.
199	OTHER (People)	15.2	594	5.5	54.7
122	TRANSPORTS PATIENTS	10.3	475	4.7	37.1
131	HANDLES PATIENTS	9.2	400	5.0	33.0
310	PREPARES EQUIPMENT	8.8	763	2.5	31.4
141	COMMUNICATES	8.6	1019	1.8	31.0
240	WRITES	7.8	360	4.7	28.1
121	PREPARES PATIENTS	7.8	803	2.1	28.0
161	SUPERVISES	7.6	504	3.3	27.4
999	TRAVELS	5.1	324	3.4	18.2
162	TEACHES	4.6	137	7.2	16.4
230	READS	2.8	209	2.9	9.9
163	CONSULTS	2.0	130	3.4	7.3
360	APPLIES (Equipment)	1.6	68	4.9	5.6
110	ASSISTS OTHER STAFF	1.3	94	3.0	4.6
311	TRANSPORTS EQUIPMENT	1.2	68	3.9	4.4
150	EVALUATES PATIENT	1.1	47	5.2	4.1
142	PARTICIPATES IN MEETINGS, etc.	1.0	7	28.9	3.5
220	RECORDS	0.9	94	2.1	3.3
299	OTHER (Data)	0.9	32	6.1	3.3
340	ADJUSTS EQUIPMENT	0.6	40	3.3	2.2
210	COPIES DATA	0.5	14	7.6	1.8
250	PLANS	0.3	7	10.3	1.2
350	SETS-UP EQUIPMENT	0.4	43	1.8	1.3
320	OPERATES EQUIPMENT	0.2	18	2.6	0.8
170	DIRECTS	0.1	7	2.4	0.3
330	CONSTRUCTS	0.0	3	2.4	0.1
	TOTAL	99.9*	6260	3.4	359.0
143	OVERSEE	9.2	342	5.8	33.1

* rounding error

Table 6A. Performance of four specific action tasks.

ACTION Type	Time Distribution			
	% of Week	Frequency	Average Minutes	Staff Hrs.
PEOPLE	68.7	4217	3.5	247.4
DATA	13.2	716	4.0	47.6
THINGS	12.9	1003	2.7	45.8
TRAVEL	5.1	324	3.2	18.2
TOTAL	99.9	6260	3.4	359.0

that the physical therapy staff spent approximatley 69% of their time in "people oriented" activities, 5% traveling, and split the remaining 26% evenly among data and equipment (or *thing*) related tasks.

MODES THAT ARE USED

All therapist and aide tasks observed can be categorized in twenty-two of the thirty-three possible modalities. Table 7 shows

that about one-third of the clinic's personnel time was devoted to tasks which were part of *professional services* to patients but not linked to a specific treatment modality. Another one-fourth of the time was required for non-therapeutic tasks such as talking with non-PT hospital staff and travel.

Table 7.
Staff Time Spent in Each Modality During a Typical Work Week

Task		Time Distribution			
		%	Average		Staff
CODE	MODALITY*	Of Week	Minutes	Frequency	Hrs.
60	PROFESSIONAL	47.6	3.4	2999	168.4
99	Other	18.3	5.1	763	64.7
32	Therapeutic Exercise	13.9	3.2	925	49.1
13	Whirlpool	7.1	4.6	331	25.2
33	Gait training	6.4	2.4	565	22.7
43	Postural drainage	3.4	6.6	108	12.0
40	Other medical	3.3	4.0	176	11.6
12	Hubbard tank	1.8	6.5	58	6.3
50	Clerical	1.7	2.4	148	5.9
21	R.O.M. evaluation	1.5	6.5	50	5.4
46	Passive R.O.M.	1.4	2.2	137	4.9
34	Activities of daily living	1.4	2.4	126	5.1
05	Hot pack	0.8	3.9	36	2.4
35	Amputee instruction	0.7	3.0	50	2.5
20	Evaluation (other)	0.4	2.5	32	1.3
44	Tilt table	0.3	3.0	22	1.1
42	Electrical stimulation	0.3	2.8	25	1.2
30	Instruction (other)	0.2	3.0	14	0.7
08	Ultrasound	0.1	2.3	11	0.4
10	Hydrotherapy (other)	0.1	5.6	4	0.3
22	Manual muscle test	0.1	7.0	4	0.4
31	General exercise	0.1	1.7	7	0.2
07	Paraffin bath	0.1	1.7	7	0.2
06	Infrared treatment	0.0	1.7	4	0.1
	TOTAL	111.0†	3.6	6602	392.1

* For explanations of the MODALITY names see the Dictionary of the Physical Therapy Observation Schedule in appendix II.
† Rounding error. All Figures include OVERSEE observations (33.1 staff hours). Total staff hours without OVERSEE = 359.0

Looking at the specific modalities, it appears that therapeutic exercise, gait training and other *instructional* modalities rank highest in the total personnel requirements. Summing the next largest group shows that 11.0% of the time was required by medical services including postural drainage, passive range of motion, tilt table, and others. Hydrotherapy, thermotherapy, and evaluative procedures are used in relatively smaller proportions of staff time.

The high proportion of time in *professional activities* may be partly associated with the therapists' role in training students as well as a function of the procedures established within the clinic. This is of considerable import since it represents over 2,999 separate tasks and 48% of the total time. This latter figure translates in 188 out of the 390 staff hours available each week.

One cannot infer from the data in table 7 that each modality lasted only as long as the average duration of an occurrence. Rather, for example, each set of tasks involved in providing therapeutic exercise required an average of 3.2 minutes (49.1 hours divided by 925 tasks). Each episode of therapeutic exercise would include a variety of tasks such as transporting the patient to the work area, preparing for exercise, communicating instructions, teaching procedures, etc.

TASKS SUITABLE FOR ASSISTANTS AND AIDES

One of the major goals of this study was to acquire estimates of the extent to which various tasks now performed by therapists might be done by assistants and aides. Table 8 depicts the redistribution of work among the staff in the clinic judged suitable by the therapists. This table accounts for 100% of all the therapists' time.

The most striking point to be drawn from the data in table 8 is the broad range of tasks (defined by an ACTION MODE combination) which therapists deem suitable for assistants and aides to perform with *some* patients, *some* of the time. As the therapist sees it, the assistant could reasonably be expected to perform many tasks which involve handling the patient in therapeutic exercise, postural drainage, passive range of motion exercise, and in the whirlpool. Further, the assistant could also carry out many of the preparations for and much of the supervision of other treatment duties. The aides' job, with this same theoretical (therapists') revision, could include more of the preparatory, adjustment, and transportation activities.

The Physical Therapist

In specifying the level of training and experience required, the physical therapists said that lesser trained staff could do their tasks with or without supervision about 32% of the time. For the remaining 68% of the time, the therapists thought the tasks should be performed by a fully qualified therapist. Should it be feasible to reallocate such a substantial portion of her work to others, the

Table 8.
Tasks of Physical Therapists Before and After Redistribution

Task No.	Task Description	PT %	Redistribution PT	Asst.	Aide
240-50, 240-60	Write P progress notes	10.2	9.5	0.5	0.2
131-32	Handles P in therapeutic exercise	5.7	2.9	2.8	
141-60	Tells P nature of treatment	5.7	4.8	0.5	0.4
161-32	Supervises P in therapeutic exercise	4.8	1.4	1.6	0.3
999-60	Travel to and from ward	4.2	3.3	0.6	0.3
230-60	Reads progress notes and charts of patient	3.7	3.4	0.3	
131-43	Handles P in postural drainage treatment	3.1	0.8	2.3	
161-33	Supervises P in gait training	3.0	1.2	1.3	0.5
162-60	Teaches/instructs P intherapeutic methods	2.2	2.2		
163-60	Consults with other professionals about P treatment, progress, etc.	2.2	2.2		
121-33	Prepares P for gait training	2.1	0.3	0.4	1.4
199-99	Other Therapeutic (No code available)	1.8	1.5	0.1	0.2
131-46	Handles P in passive exercise	1.6	0.3	1.1	0.2
121-32	Prepares P for therapeutic exercise	1.5	0.5	0.4	0.6
142-60	Participate in clinics, rounds, meetings, etc.	1.3	1.3		
141-99	Conversation with P (get P water, wash hands)	1.2	1.1	0.1	
162-32	Instructs P in therapeutic exercise	1.2	0.7	0.5	
121-13	Prepare, position P for whirlpool	1.1	0.4	0.2	0.5
299-60	Other data handling (review film, grade tests)	1.1	0.7		0.4
360-40	Adjusts equipment for medical treatments	1.1	0.1	0.4	0.6
141-32	Tells P about therapeutic exercise	1.0	0.8	0.2	
161-34	Supervises P in ADL	1.1	0.4	0.5	0.2
310-60	Prepares equipment for treatment	1.1	0.1	0.1	1.0
150-21	Evaluates P range of motion	1.0	1.0		
162-21	Teaches students range of motion test	0.8	0.8		
131-13	Handles P in whirlpool	0.8	0.4	0.1	0.3
131-40	Handles P for other medical treatment	0.8	0.2	0.2	0.4
162-33	Teaches P in gait training	0.7	0.2	0.5	
162-43	Teaches P postural drainage procedures	0.7	0.7		
199-60	Travel and waiting	0.7	0.1	0.3	0.3
161-13	Supervises P in whirlpool	0.6	0.1	0.3	0.2
310-13	Prepares or cleans whirlpool	0.6	0.1	0.1	0.4
110-33	Assists PT providing gait training	0.5		0.25	0.25
220-60	Records professional notes	0.6	0.6		
310-33	Prepares equipment to be used in gait training	0.5			0.5
360-13	Immerses body part in whirlpool	0.5	0.6		
	Other Tasks (not listed above)	24.9	18.0	2.2	4.7
	Personal	4.5	4.5	DNA	DNA
	TOTAL	100.2*	67.1	17.8	14.0
	Supervision of assistants, more intensive services and more time to give and receive trainings, etc. Oversees	14.5	32.9 8.8	DNA 2.4	DNA 3.3

* rounding error

therapists' duties might be realigned in a number of ways. One possibility would be for the therapist to spend more time teaching and supervising other staff. Another would be to provide more patient services through the addition of suitable numbers of assistants and aides accompanied by a greater supervisory emphasis in the physical therapy duties. Neither of these possibilities can be considered on the basis of table 8 alone. Other considerations such as the sequence of tasks, and the probability of certain physical therapy skills being required at a specific time, need to be taken into account. An analysis of this type will be done in subsequent work.

The Aide

From table 9 it would appear that a significant part (13.2%) of the physical therapist's work load might be potentially assumed by aides. Since the duration of some tasks may be quite brief it will not always be practical to realize the full potential use of aides suggested by these data. Further, it will often not be desirable to have an aide take over one job in a sequence of tasks or at critical points in the process. For example, consider the situation where the therapist has just completed some exercise modality with a patient and must prepare him in some way before moving on to the next treatment. If the preparation could be done quickly, it would not be practical to sit around and wait for an aide to arrive to do it. Alternatively, if the preparation time is larger but the patient is particularly nervous and in need of reassurance, it might not be desirable to call an aide to do the job while the therapist leaves.

When feasible, it seems clear that the therapist deems most preparatory tasks associated with whirlpool, gait training, and therapeutic exericse as within the scope of an aide's capacities. The therapist also sees the aide as capable of preparing equipment and assisting her in those tasks that require two staff members. In selected instances it appears that the aide might supervise the patient's therapeutic activity to be sure that the proper procedures are being followed in a safe manner.

The Assistant

The therapists judged that about 20% of the work they were doing could be done by assistants. Since the assistant is already becoming a part of the physical therapy team, it is of interest to know how their supervisors would want to use them. The data in

Table 9. Tasks of Aides Before and After Redistribution

Task No.	Task Discription	Observed %	% PT Time Transferred	% Aide Time After Transferred
122-60	Transport P to and from clinic	28.2	0.2	22.5
199-99	Waiting, personal hygiene, coffee break	27.9	0.2	22.2
310-60	Transports equipment and objects	12.2	1.0	11.1
121-60	Prepared P for transporting or services	5.6	0.2	4.7
999-60	Travels to wards & return dept.	3.7	0.3	3.4
310-13	Prepares whirlpool bath	3.3	0.4	3.2
311-60	Transports equipment for treatment	3.2		2.5
121-33	Prepares P for gait training	0.3	1.4	2.4
141-60	Talk to P or staff	2.2	0.4	2.4
141-99	Personal conversation & communication	2.1	0.1	1.8
121-32	Prepares P for therapeutic exercise	0.4	0.6	1.3
161-32	Supervise therapeutic exercise	1.1	0.3	1.3
121-13	Prepares P for whirlpool	0.5	0.5	1.2
310-12	Prepares Hubbard Tank	1.4		1.1
360-40	Assists in applying other medical treatment	0.2	0.6	1.1
999-99	Travels (errands)	1.4		1.1
310-33	Prepares gait training equipment	0.2	0.5	1.0
110-60	Assists PT in providing treatment	0.9	0.1	0.9
121-12	Prepares P for Hubbard Tank	0.8	0.2	0.9
161-33	Supervises gait training	0.0	0.5	0.8
310-32	Prepares exercise equipment	0.2	0.4	0.8
110-13	Assists in admin. whirlpool treatment	0.9		0.7
299-60	Professional work with data	0.1	0.4	0.7
110-33	Assists in gait training	0.3	0.3	0.6
121-43	Prepare for postural drainage	0.0	0.4	0.6
131-40	Handles other PT medical treatments	0.0	0.4	0.6
310-40	Prepares equipment for other PT medical treatment	0.1	0.3	0.6
131-13	Handles P in whirlpool	0.0	0.3	0.5
199-60	Professional work with people	0.0	0.3	0.5
	Other activities	2.5	2.9	6.8
	TOTALS*	99.8	13.2	99.4†
	Oversee	2.3	3.7	7.4

*Rounding errors

†The following formula was used to derive this column

Aide's New Job = [% observed + 2 (% transferred)] / [Total % of Observed Time + 2 (Total % of transferred Time)]

Since the current employment ratio is 2 PT: 1 AIDE, per cents of transferred time must be multiplied by a factor of two (2) to equate both columns one and two in terms of number of staff hours implied.

table 10 reflect the nature of a hypothetical assistant's job as made up of tasks which therapists believed an assistant could do. Although there may well be a difference between these judgments and reality, it appears reasonable to consider the therapists' opinions as a beginning guide for allocating responsibilities. Certainly, one of the realities of the clinic situation is that a physical therapist will be responsible for assigning work to and

Table 10. Assistant Potential Work Load

Task No.	Task Description	% Work Week
131-32	Handles P in therapeutic exercise	15.7
131-43	Handles P in postural drainage	12.9
161-32	Supervises P in therapeutic exercise	10.0
161-33	Supervises P in gait training	7.3
131-46	Handles P in passive range of motion	6.2
999-60	Travel in clinic	3.4
131-40	Handles P in medical treatments (n.c.)	1.1
240-60	Writes notes regarding P behavior	2.8
141-60	Tells P about treatment	2.8
121-33	Prepares P for gait training	2.3
121-32	Prepares P for therapeutic exercise	2.3
162-32	Teaches P therapeutic exerciese	2.8
161-34	Supervises P practice of ADL	2.8
162-33	Supervises P engaged in gait training	2.8
230-60	Reads P records	1.7
360-40	Applies medical treatment	2.3
161-13	Supervises P in whirlpool	1.7
121-13	Prepares P for whirlpool	1.1
141-32	Tells P about therapeutic exercises	1.1
199-60	Travel and waiting	1.7
110-33	Assists in handling P for gait training	1.4
199-99	Other therapeutic (no code available)	0.6
310-60	Prepares equipment for treatment	0.6
131-13	Handles P in whirlpool	0.6
310-13	Prepares or cleans whirlpool	0.6
	All other services and personal	12.4
	TOTAL	101.0*

* rounding error

supervising the assistant. For this reason, if for no other, the assistant's job must be one that is professionally acceptable to therapists.

The primary tasks of the assistant would involve handling and supervising the patient in treatment. The active "laying on of hands" would take about 34% of the assistant's time and supervision about 22%. Supervision here refers to observing the patient and reminding him of certain actions he must do during treatment. As with the therapist and aide, a small but significant portion (about 4%) of the assistant's time would be involved in preparation, communication and travel.

The assistant was seen as having a substantial role with respect to therapeutic exercise. One-third of the assistant's time would be allocated to this mode. The other three modes which occurred frequently were postural drainage, gait training, and a variety of

other medical treatments. Each of these would account for about 14% of the assistant's work week. In all, this would account for 75% of the assistant's work week.

One might interpret the above results as indicating the willingness of the therapist to relinquish the physically strenuous, "dirty" work. One medical specialist who works closely with physical therapists said this was what his impressions would tell him. However, prior to seeing these data, he had also indicated that one of the problems with therapists was their reluctance to divest themselves of the "laying on of hands" functions to assume more professional responsibilities. Thus, it seems that the offhand, intuitive interpretations of events is quite fallible as a basis for deciding what therapists want or how to use assistants.

Implications and Discussion of Results

TO ILLUSTRATE the potential value of objective data versus the risks of generalized opinions in decision making about the training and utilization of physical therapy personnel, a set of examples are described below. In the first section, contrasts are drawn between the pilot study data and prior descriptions of the assistant's job as formulated by two formal organizations. Secondly, the possibilities for using data, such as collected in the pilot study, for making personnel and other administrative decisions is examined.

COMPARISONS WITH ASSISTANTS JOB DESCRIPTIONS

Since the APTA Committee on the Utilization and Training of Physical Therapy Assistants has developed a preliminary statement (1968) of the recommended task assignments as related to functions, a model training program, and a tentative job description, it seems of interest to compare the considered opinions reflected in their report with the findings of this pilot study. In addition, a brief comparison will also be drawn between the available objective data and the report of the Florida State Department of Education (1969) in the same area. However, since the pilot study was conducted in a single university teaching hospital, it is clear that the comparisons and discussions will only enable us to illustrate the potential value of a more generalized investigation of physical therapy services using the model developed for this study.

APTA Report

Since the APTA committee on support personnel spent considerable time developing tentative guidelines for the training and use of physical therapy assistants, it would appear useful to examine the relationship between some of the tasks which they

list as appropriate functions and the results of the pilot study. These tasks are clustered with respect to actions and modalities which illustrate how task analysis, as conducted by this study, might clarify the specific ways in which the assistant could be most effectively used. For example, one assistant function listed as generally acceptable is "follows established procedures and observes safety precautions in the use and applications of whirlpool treatment." However, the objective data gives the impression that the various actions associated with whirlpool treatment vary widely in terms of the complexity of the tasks involved. For example, therapists view the aide as the primary person for assisting in whirlpool treatment or adjusting the bath. On the other hand, the therapist sees herself as the primary person to handle the patient in the whirlpool and talk with the patient about that treatment. Supervising the patient and setting up the whirlpool are seen as appropriate about half of the time for the assistant and the other half of the time for the aide. Though the aide more frequently engages in, or was judged appropriate for preparing the patient for whirlpool treatment, this particular task was assigned one-third of the time to the physical therapist and one-fifth of the time to assistants.

Another example of a task and mode listed in the APTA committee's roster of assistant functions is "trains the patient in postural drainage." The preparation of the table for postural drainage was always deemed appropriate for the aide as well as, in a clear majority of cases, the preparation and overseeing of the patient who was receiving this treatment. The action associated with postural drainage which physical therapists thought the assistants should be able to do in a majority of the cases, was *handling* of the patient. Here again, the data indicated that in all the instances recorded, the communication with the patient concerning the postural drainage should be carried out by the physical therapist.

Still another task which illustrates the value of objective data from a broad sampling of facilities is associated with performing passive range of motion treatments. The preparation of the patient was deemed appropriate for assistants about half the time, and judged to require the physical therapist the remaining time. Handling the patient in providing passive range of motion treatment was deemed suitable for assistants about 70% of the time, and was otherwise divided between therapists and aides.

State Of Florida

The Florida State Department of Education interim report on physical therapy assistants includes a job description developed by the planning committee for the training program at St. Petersburg Junior College. The first major area they list as a task assignment is "aids patient in preparation for, during, and at the conclusion of treatment." Our observations, however, show that tasks that fall in this general category are either now being performed by physical therapy aides or are judged to be appropriate for aides by the physical therapist. Thus, should this finding hold for a broader sample of physical therapy services, it would appear that provision for the training of assistants in the knowledge and skill required to perform this cluster of tasks would be appropriate if they are to act as supervisors of aides. However, assigning assistants to preparation tasks in general, would be an under-utilization of their education and skills.

The six other task clusters incorporated in a job description prepared by the planning committee for the physical therapy assistant program at St. Petersburg Junior College follow:

1. Aids patients in the safe practice of activities related to the development of strength and endurance.
2. Aids in administering therapeutic exercises and massage as directed.
3. Applies heat to affected parts of body by use of infrared or radiant heat lamps, hot packs, cabinet baths, short wave, diathermy, and other electrical apparatus.
4. Gives whirlpool, contrast, paraffin baths and assists in use of certain other hydrotherapeutic procedures.
5. Assists patients in performance of routine exercises involving use of such apparatus as progressive resistance exercise equipment, shoulder ladder, wrist roll, and pulley weights.
6. Supports patient as necessary in ambulation and other exercise activities, including activities of daily living.

With respect to operations observed at the University of Florida Physical Therapy Clinic, about half of the time the therapists thought that assistants could carry out tasks which would fall under items 1, 2, and 6 above with the particular patient she was serving. The other half of the time, the therapists thought tasks of this type should be performed by licensed physical therapists. As was suggested earlier, this may well reflect individual differences in clients, so that with certain patients the skill level required to

perform a particular task may be greater than for others. The therapists judged that task 4 in the list could be equally divided among therapists, assistants, and aides depending upon the needs of the particular patient. Unfortunately, the University of Florida clinic data did not yield sufficient observations that could be linked to task cluster 5 and thus give an indication of the degree to which therapists saw tasks in this area as being suitable for assistants. The fact that such tasks occur very infrequently in the University of Florida Physical Therapy clinic may be idiosyncratic or indeed indicate that the amount of time devoted to tasks of this type might not justify incorporating a substantial portion of the assistant's training in the skills and knowledges associated with these modalities.

The illustrations presented above show some of the limitations in listing modalities and broad classes of tasks as suitable for physical therapy assistants. It shows that in some instances the tasks appear well suited to aides while other cases are considered suitable only for performance by physical therapists. It further suggests that a larger pool of data from a representative sample of institutions would enable curriculum planners and administrators of physical therapy clinics to secure a more precise understanding of the way in which task complexity varies within various modalities as well as which tasks appear most appropriate for incorporation into the assistant's position.

One factor which has not been previously used in decision-making about appropriate job functions is the relationship of the

Table 11.

Skill levels required for preparing patient for whirlpool treatment.

(N = 18)

Patient Referral Source	Minimum Level of Training Required			
	THERAPIST	ASSISTANT	AIDE	TOTAL
Ob-GYN	0	0	6%	6%
Pediatrics	11%	6%	33%	50%
Surgery	17%	11%	17%	45%
TOTAL	28%	17%	56%	101% *

* rounding error

patient's "admission category" to the complexity of the task to be performed. Even such a simple task as "preparing the patient for the whirlpool" is open to much more serious consideration when viewed in light of this factor. Table 11 reveals how this relationship appeared in the clinic studied. It would appear that most OB-GYN patients can be served by aides, while one-third of

all pediatric referrals and almost two-thirds of the surgery cases require at least the skills and knowledge of an assistant. While this information cannot now be used for decision-making because of the limitations imposed by a small and restricted sample, it should make clear the limitations of using intuition in place of objective data.

Our findings thus confirm the fact that there are wide differences between generalized judgments and objective data about the suitability of certain functions for assistants and aides. These differences are substantial enough to suggest that the utilization and training of the physical therapy assistant might take significantly different patterns if based on more specific observations, such as those collected by this study, and related to such practical considerations as the length of training versus the relative need for performing a particular function.

IMPROVING DECISION-MAKING

One way to look at a physical therapy clinic would be to visualize it as a system which contains not only the physical plant and equipment, but also such things as current personnel, some average number of patients that are always in need of services, an operating budget, a set of policies about who shall do what, etc. It is obvious that certain relationships exist among these parts of the system. For example, a drastic change in the budget will most likely influence the number and type of currently employed personnel. Some changes have a less obvious effect, e.g., the introduction of what one specific single piece of additional equipment will most influence the number of patients that can be served in a month.

An analogous situation would be the cook who is concerned about the height of a cake baked from a recipe that contains five ingredients. One way of testing the influence of a single ingredient would be to hold the other four constant and bake cakes with varying amounts of the first. The differing heights of the cake could then be observed and recorded. The same procedure could be followed to test the other four ingredients. Upon completion, the cook could make some good predictions about what would happen if some particular amounts of each ingredient were used to bake a cake. Alternatively, the cook could decide on the desired cake height and work backward to the appropriate receipe. The above process, followed in careful fashion, is called systems analysis when applied to complex organizations, i.e., specifying cause–effect relationships.

One major consideration, however, is the cost of uncovering these relationships. The cook might be able to afford to experiment with her cakes, but it is usually not feasible for heads of physical therapy departments to introduce changes so readily. Very few organizations can afford to risk upsetting a clinic, for example, just to experiment with different staffing patterns (assuming the personnel were willing). For that reason, it is very valuable and useful to build a MODEL of the facility and try out various decisions (i.e., prospective changes) on it.

While the use of models to test decisions is not commonly recognized, there are many widely known examples. A list of typical models would include war games to test strategies, driver training devices to test individual skills and the impact of educational programs, the construction of tiny buildings to evaluate architectural drawings, etc. All of these have one thing in common: that the impact of making small or large changes can be cheaply tested and the results used for decisions about what should be done to the full scale organization, education program, or physical plant. In this same vein, a model of a physical therapy facility can be constructed and used to simulate the most likely outcomes of important decisions.

Physical therapy model. As indicated, an ideal model would use all of the factors and relationships relevant to the decisions to be made. If this dictum were completely carried out, a physical therapy model would have to contain almost all factors relevant to human life since even the degree of air pollution might eventually influence the number of tilt tables needed. However, only certain of the relevant factors can be reasonably manipulated by the decision-maker, e.g., the number of tilt tables in the facility. Since the other factors are not reasonably subject to control, these are left out of the model and considered the environment in which the physical therapy system must function.

Figure 3 illustrates an initial model of a physical therapy facility or, with some minor changes, a model of all the clinics in a state. The essential ingredients consist of:

A. Information about how many people are likely to require physical therapy services and their hospital admission categories
B. Recorded observations of what physical therapy services which patients receive, how often, and from whom, i.e., results of a job analysis

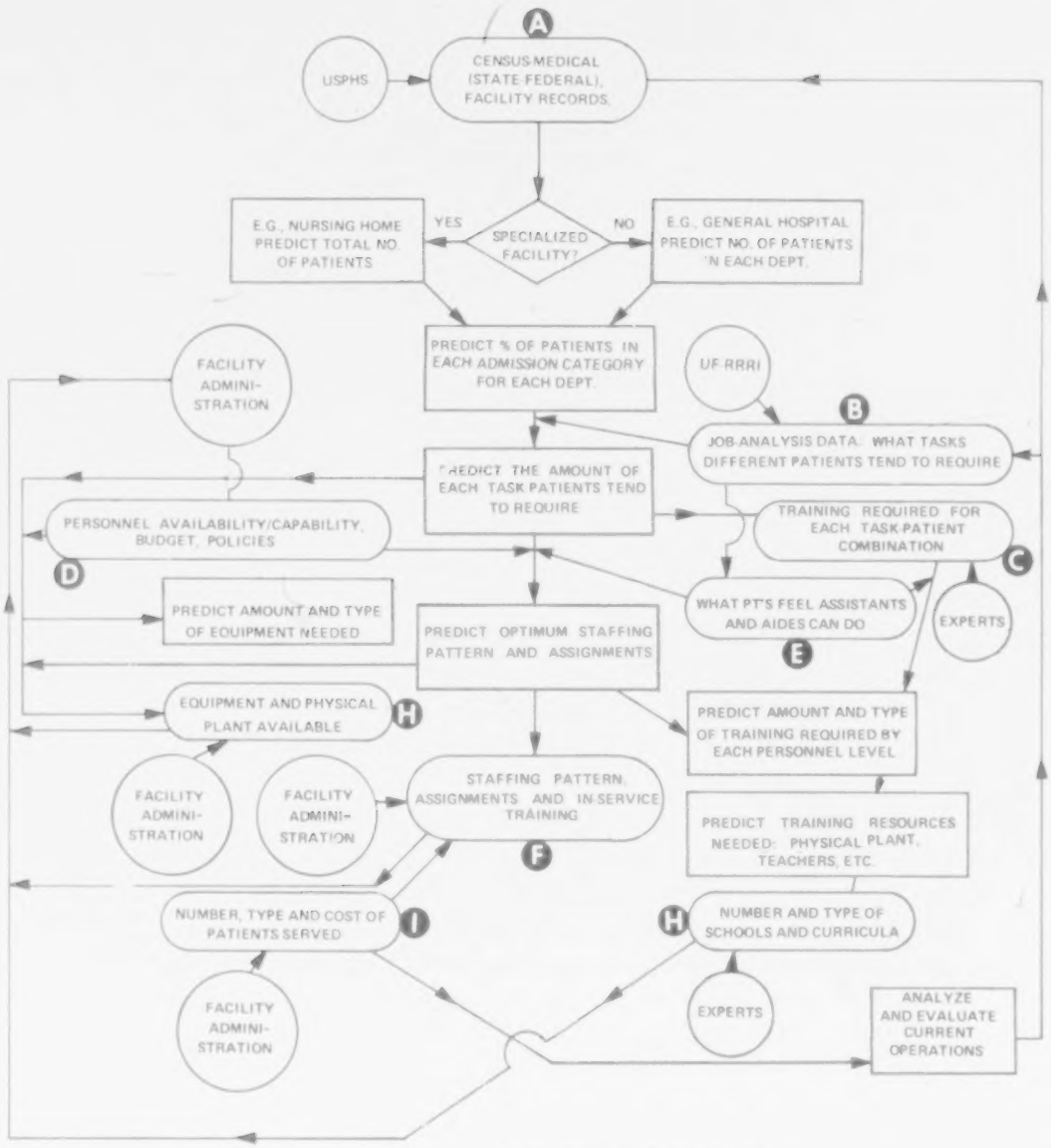
A
USPHS
CENSUS-MEDICAL (STATE-FEDERAL), FACILITY RECORDS
E.G., NURSING HOME PREDICT TOTAL NO. OF PATIENTS
YES
SPECIALIZED FACILITY?
NO
E.G., GENERAL HOSPITAL PREDICT NO. OF PATIENTS IN EACH DEPT.
PREDICT % OF PATIENTS IN EACH ADMISSION CATEGORY FOR EACH DEPT.
UF-RRRI
B
JOB ANALYSIS DATA: WHAT TASKS DIFFERENT PATIENTS TEND TO REQUIRE
FACILITY ADMINI-STRATION
PREDICT THE AMOUNT OF EACH TASK PATIENTS TEND TO REQUIRE
TRAINING REQUIRED FOR EACH TASK-PATIENT COMBINATION
C
PERSONNEL AVAILABILITY/CAPABILITY, BUDGET, POLICIES
D
PREDICT AMOUNT AND TYPE OF EQUIPMENT NEEDED
PREDICT OPTIMUM STAFFING PATTERN AND ASSIGNMENTS
WHAT PT'S FEEL ASSISTANTS AND AIDES CAN DO
E
EXPERTS
EQUIPMENT AND PHYSICAL PLANT AVAILABLE
H
PREDICT AMOUNT AND TYPE OF TRAINING REQUIRED BY EACH PERSONNEL LEVEL
FACILITY ADMINI-STRATION
FACILITY ADMINI-STRATION
STAFFING PATTERN, ASSIGNMENTS AND IN-SERVICE TRAINING
F
PREDICT TRAINING RESOURCES NEEDED: PHYSICAL PLANT, TEACHERS, ETC.
NUMBER, TYPE AND COST OF PATIENTS SERVED
I
H
NUMBER AND TYPE OF SCHOOLS AND CURRICULA
FACILITY ADMINI-STRATION
EXPERTS
ANALYZE AND EVALUATE CURRENT OPERATIONS
KEY
TYPICAL DATA SOURCE
A–I INPUT AS DATA OR OUTPUT AS AN ANSWER
COMPUTER PROCESSES

figure 3. Model of a
PHYSICAL THERAPY FACILITY

C. Experts' opinions about what training is required to perform each task with different kinds of patients
D. Operating data from a facility (or state) concerning personnel employed and available, budget, policies, etc.
E. Therapists' opinions about what tasks they think aides and assistants can or should do with which patients
F. The current staffing pattern and related in-service training program (if any)
G. Facility equipment and physical plant
H. The number and type of schools (including curricula) that train therapists, assistants, and aides
I. The number, type, and costs of services provided to patients (including descriptions of the patients)

From these ingredients many different kinds of "cakes" can be produced. The unlettered rectangles in figure 3 represent statistical computations that are necessary to produce these important

How the Model Works. All of these ingredients or data are stored in a computer which has been programmed to take all relevant realtionships into account when making a prediction. As with the cook, one may decide what the problem area is and work backward to a solution (or recipe). Some examples of this process follow:

1. Predicting the optimum staffing patterns for a clinic. Local, state and federal records (A) can provide predictions of the number and categories of patients expected to be admitted in the next year. Job analysis data (B) would indicate what types of services each of these patients required in the past. The two data set (A+B) are, therefore, a prediction of the total workload to be expected. Facility records (D) can provide figures describing the resources (e.g., personnel, funds, equipment) available to meet this expected demand for physical therapy services. Lastly, therapists' opinions (E) can be used as a guide to assigning the appropriate level of personnel to each task. The four factors (A+B+D+E) combined can then provide the solution for an optimum staffing pattern. All other factors (C, F-I) are ignored.

Further, should there be some doubt about the accuracy or validity of some of the information, additional tests can be easily performed. Suppose the data predicting the number and categories of patients is uncertain. It is necessary then, only to (a) make a guess about what these numbers *should* be, (b) keep the other factors (B+D+E) the same, (c) solve for the optimum staffing

patterns, and (d) compare the two solutions. If the solutions are the same, no action is necessary because the issue of intuition vs. records would appear to make no difference. If the solutions differ widely, then additional study is warranted because the solution is acutely sensitive to this factor.

In short, a staffing pattern can be predicted on current data and the impact of the information being wrong can be judged. Under typical circumstances, in fact, it is always useful to try different values of each factor so as to determine *in advance* what the appropriate action would be if an error is being made.

2. Predicting optimum curricula for training programs. By evaluating factors A+B, as above, an estimate can be made of the total services that will be required to meet future patient needs. The minimum training required to perform a particular task with a particular class of patients (factor C) can be estimated by a group of experts. Thus, we would know the quantity of services required and what training is required to do each task (A+B+C). Next, data from therapists observed during the job analysis (factor E) would indicate which tasks they think could be done by assistants or aides or both. From the combination of these four factors (A+B+C+E) a solution could be derived which described training program curricula that contain a minimum of duplication and a maximum amount of information relevant to the specific task level-assignment. Here, too, it would be prudent to see what the curricula would look like if, e.g., the therapists' judgments should turn out to be either underestimates or overestimates of the support personnel

3. Other decisions. Other applications of the model would enable administrators to improve their ability as follows:

A. Forecast equipment and physical plant needs
B. Estimate the maximum number of patients that can be served
C. Enumerate all of the training areas that must be considered in university programs
D. Evaluate which level of personnel is doing what to whom (how the staff is spending time)
E. Forecast a strategic picture of the future or present (how many patients, needing what kind of services, being served how often)
F. List the factors that are the most critical limits on services, e.g., sufficient equipment but not enough physical plant, too many ultrasound machines, not enough beds, etc.

In summary, many problems and their solutions can be tested and evaluated with this generalized model. It allows one to see what the likely result will be of taking some particular course of action. Techniques are provided for solving complex problems and for judging what the cost would be if some part of the data is faulty. Finally, the model provides a structure into which new or revised information and insights regarding the factors that affect physical therapy clinics and their personnel can be readily stored and used for more effective decision-making.

Playing this management game of *what if . . ?* permits decisions to be tested against real data that was collected in the field and represents what has already happened and is likely to happen in operational physical therapy clinics. Such testing can pinpoint critical areas of conflict which have not previously been identified and forestall unforeseen and unhappy results of what superficially seems to be good planning but is not. Just as the National Aeronautics and Space Administration pretests all of its decisions about space flights, physical therapists and their professional associations will have the capability of predicting the impact of a wide variety of changes on everything from a rehabilitation center to the national system of physical therapy services.

The accuracy of these predictions, however, is directly proportional to the amount and representativeness of the data used to construct it. At present, these data are derived from a pilot study of a single physical therapy clinic. Predictions for this facility are expected to be of a high order of accuracy which will decrease as the size of the group (e.g., all teaching hospitals) for which the forecasts are made increases. However, since the methodology has now been tested in the field, little delay should be expected if the decision is made to collect similar data across the nation. There is no reason why the delivery of physical therapy services should be less than the most effective and efficient that can be foreseen. This simulation model can enhance our ability to foresee the problems and advantages inherent in different alternatives to critical decisions. On that basis alone, its development and use should be encouraged.

Summary and Conclusions

A METHOD FOR ANALYZING THE WORK in a department of physical therapy was devised and applied in a teaching hospital. Physical therapists, trained as observer-investigators, helped refine the coding system and were able to reliably record job behavior in the physical therapy department. The nature of the therapist's and aide's job was described and implications for physical therapy practice and academic preparation drawn. Therapists' judgments provided a basis for describing tasks which might readily be incorporated into the work of a trained physical therapy assistant.

Since physical therapists spend a substantial proportion of time performing, communicating, supervising, consulting, teaching, and directing actions, it seems desirable that the academic preparation of therapists should include course work in teaching, the therapeutic relationship, general semantics, and social psychology. Perhaps even more important would be the incorporation into clinical practice of instruction directed toward developing skills in listening and talking to patients and colleagues.

The findings of this pilot study clearly suggest that the new programs for preparing physical therapy assistants might well emphasize the knowledge and skills required for administering some aspects of therapeutic exercise and gait practice. Another modality which the assistant might be expected to perform effectively, under the general direction of the physical therapist, is whirlpool treatment. This conclusion arises from the high frequency of occurrence of these modalities during treatment and the readiness which therapists show for having assistants perform most of the related tasks.

Dependent upon available support, the UF-RRRI staff plans to extend the research model described by collecting data from a representative sample of facilities with physical therapy departments. The addition of this new information would provide the

necessary data for more efficient and effective decision-making in all types of facilities, for states or regions and, hopefully, for the profession as a whole.

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Appendixes

Appendix I

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APPENDIX II

DICTIONARY FOR THE PHYSICAL THERAPY OBSERVATION SCHEDULE

CODING DECISIONS

I. STUDENTS

A. When students are present use 014 (person) code as follows:

1. PT teaching a student while ignoring the patient: 162 180 014 60
2. PT exchanging places with a student while providing treatment or merely having the student attend-look-on-participate. Code activity as if no student was present BUT Person = 114

B. LEVEL: have therapist make judgments about events under A2 above but not the teaching role (A1). Teaching a student is always LEVEL ONE (1).

II. PASSING A PATIENT ON TO A PT or AIDE

141 (COMMUNICATES) 270 (INSTRUCTING) 113 (PT) or 111 (AIDE) followed by:

A. 143 (Overseer) if PT plans to return to this patient or

B. nursing if this patient has been permanently shifted to another staff member. (this code can be corrected/adjusted depending upon the actual result).

III. OVERSEE A PATIENT RESTING

143 180 180

IV. TIED UP WITH STAFF MEMBERS

Ask the person being observed: *At the time you called her, did you need this* second staff member to perform this service in a manner consistent with good PT practice or was it merely a convenience?

If more than two staff members are present, note their presence under "Comments".

All two part codes such as: 018 PT - AIDE
017 PT - PT
015 AIDE - AIDE

are used only in situations where a second person is *required* but not on all (100%) occasions, e.e., in order to hold a conversation with someone—the second person is *always* required, therefore, the two-part codes is *not used;* however, positioning a patient *may* require a second person, and if it does in some instance, use the appropriate two-part code listed above.

V. CHANGING PAGES

As the staff member being observed moves from patient to patient, change pages with each patient switch even if the staff member is returning to an individual seen earlier.

VI. PREPARE EQUIPMENT

When PT leaves a patient (stop the clock) and begins some activity related to a concrete object (e.g., sandbag) and the time runs over one minute—use 310 (Prepare T) action verb to describe this event. If the time is less than a minute, add it to the next task.

VII. SELECTING AN OBJECT

If the appropriate OBJECT is not entirely clear, wait for the next task to begin. If this does not clarify the situation, use either 100 (ACTION/TECHNIQUE), 180 (PROFESSIONAL) or 199 (OTHER). In many cases the OBJECT code is the answer to one of the following questions: (a) what kind of ACTION is going on, or (b) for what reason is the staff member doing this task?

VIII. MULTIPLE SIMULTANEOUS EVENTS

If more than one event seems to be occurring at some point in time, code that task which seems to be the *primary* action and record the others in the COMMENTS columns. Events occurring in sequence can always be recorded in that fashion. Too many tasks will always be preferable to having too few. The latter can never be recoded.

IX. TEACHING

Teaching always implies that the content is to be remembered and/or acted upon for some considerable period in the future. For example, merely instructing a patient to hold a particular position for some therapy is *not* teaching. Instructing the same patient in basic activities such as stair climbing for use in the home *is* teaching. The difference lies primarily in the intent that the content be remembered and that the patient make an effort to do so.

X. SITE AND BIOGRAPHIC DATA

A. Hospital data

1. Hospital (HOSP): 01 = J. Hillis Miller Health Center
   02 = Veterans Administration Hospital
2. Staff member being observed:
   1=Registered Physical Therapist (RPT)
   2=Assistant in Physical Therapy (ASST)
   5=Aide in Physical Therapy (AIDE)
   9=OTHER
3. Observer number: Insert your own identification number.
   1=Bowman 2=Chambers 3=Kapicak 4=Nelson
4. Date of observation: insert number of month, date and rightmost (units) digit of the year (e.g., 1969 = 9, 1970 = 0)
5. Start time: insert hour and minutes that observation began using a *24 hour clock* where, e.g., 1:00 P.M. is 13:00 and 2:00 P.M. is 14:00, etc.
6. Staff social security number: insert social security number of the staff member being observed.
7. Staff name: print first initial and last name of staff member being observed.

ALL OF THE ABOVE IS COMPLETED ONCE DURING EACH TWO HOUR OBSERVATION PERIOD—PREFERABLY BEFORE THE RECORDING IS INITIATED

B. Patient data

1. Patient number: insert hospital-assigned history number (i.e., that number that is used to locate a patient's records).

2. Age: insert patient's age at the last birthday.

3. Visit: insert the best available estimate of the number of previous treatments this patient has received for his or her current problem.

4. Sex: 1 = male
   2 = female (FEM.)

5. Hospitalization status: 1 = inpatient (INPAT)
   2 = outpatient (OUTPAT)

6. Referring department (REFER DEPT):

1=OB/GYN (obstetrics)	5=NEURO (neurological)
2=ORTHO (orthopedics)	6=PEDIA (pediatrics)
3=MEDIC (medicine)	7=SURG (surgery)
4=E/N/T (ear, nose & throat)	8=PSYCH (psychiatry)
	9=OTHER

7. Patient name: first and middle initial as well as last name.

8. Diagnosis/history/objectives: in the J. Hillis Miller Health Center internal departmental records include a Xeroxed copy of the physician's referral. This card provides three open-ended categories of interest: (1) Provisional DIAGNOSIS, (2) HISTORY, and (3) Treatment OBJECTIVES or special instructions. This information is to be copied directly from the referral form onto the recording sheet. Each category of data is to be preceded by a capital letter indicative of its classification (i.e., D or H or O) and ended with a slash (/) to separate it from the other information. If these data are not available--print N.A. in the space marked DIAGNOSIS/ HISTORY/OBJECTIVES.

ALL OF THE ABOVE (ITEMS B1-8 INCLUSIVE) ARE TO BE COMPLETED ONCE FOR EACH PATIENT SEEN DURING AN OBSERVATION PERIOD.

XI. PREPARES THINGS

Trash barrels and other non-PT specific equipment and maintenance.

The code for such work as collecting or removing trash barrels, cleaning floors and walls, etc. is:

310 (Prepares T)/ 360 (physical plant)/ 060 (if alone) or other code/ 99 (other).

XII. TRANSPORTATION

Returning from transporting a patient (alone), going for a patient (alone), or returning from unsuccessfully trying to find a patient (alone) is coded:

122 (transports P)/ 180 (professional)/ 060 (alone)/ 60 (professional)

On the other hand, returning a patient to a ward (not alone) or returning with a patient to the clinic from a ward is coded:

122/ 180/ 100 (patient)/ 60

Thus, going up to a ward alone, not finding a patient and then returning alone is a single continuous code (122-180-060-60). Finding a patient or starting out with a patient requires two (2) or more codes on all occasions.

NOTE: ALL SUBSEQUENT RECORDING FORMS (AFTER THE FIRST) THAT REFER TO THE SAME PATIENT (During the same Observation Period) ONLY NEED HAVE HIS NAME AND NUMBER FILLED IN.

ACTION

(People)

110 ASSISTS

Serve as receptionist or clerical person.

Act as an extra guard in teaching a severely disabled person to walk.

Help to hold or move a heavy person or object.

Guide and/or help non-staff person (e.g., a patient) to a rest room.

121 PREPARES P

Protect patient's eyes with goggles or gauze pads. Placing bell or warning device in hands of patient. Cleaning and drying body part before applying paraffin. Having patient remove clothing and drape patient. Dress patient for Hubbard tank or exercise, use lift to place patient in Tank and start-direct agitators. Remove-replace stump bandage.

Follow-up activities are also considered under PREPARE P such as removing a paraffin glove, drying patient, transfer to treatment table or dry stretcher for dressing.

Strap hand with weak grasp to pulley with elastic bandage, put walking belt on.

Position person and/or body part to be treated. Seat comfortably.

All of the above including simultaneous, incidental conversation (whether related to the treatment or not and of relatively brief duration).

122 TRANSPORTS P

Bring patient to and from department.

131 HANDLES

Includes general massage, active assistive and passive range of motion exercises as well as other activities that require a laying on of hands.

Indicates a high level of manual contact which purports to elicit neuromuscular responses or inhibit abnormal ones. Includes such PNF techniques as placing weakened muscle in position of stretch, rotating head to facilitate the tonic neck reflex, touching and tapping body part to activate motion. Also includes Bobath handling, Brunnstrom methods, Rood's method of positioning, Partridge's indirect muscle training and Knott's PNF (proprioceptive neuro-muscular functioning).

141 COMMUNICATES

Gives sets of verbal commands (as opposed to lengthy instructions given at first, which is teaching).

Answers, speaks on, and refers telephone calls.

Gives reassurance.

Cautions patient against movement during diathermy.

Describes what sensation should be felt with any treatment, and when to use call bell.

Explains treatment about to be given.

142 PARTICIPATES

Participate in clinics, rounds, conferences, in-service lectures or other inter- and intra-departmental meetings.

143 OVERSEE

A special case of SUPERVISION (161) in which the therapist is providing treatment to one patient while acting as a monitor for another (i.e., *overseeing* the receipt of treatment by a second patient who does not require the literal full attention-presence of a PRT).

150 EVALUATES

To test the status quo and record the results. Examples would be to perform a manual muscle test, evaluate R.O.M. by gonimetry and eye-balling,

determining level of A.D.L., electrodiagnosis including chronaxie, strength-duration curve, tetanic-twitch reaction, etc. Fill out pre-prosthesis check-out. Evaluate patient response to treatment, as in ultraviolet sensitivity. Evaluate sensory status of patient.

161 SUPERVISES

Where an individual or patient is observed and reminded of certain actions that must be done. This includes, e.g., watching a patient on a tilt table.

162 TEACHES

Synonymous with instruction. Formally convey information about such things as utilization, maintenance, technique, methodology of e.g., equipment, maintenance of correct posture and body mechanics, ambulation, balance, A.D.L., hygiene, bandaging, conveying aims and philosophy of physical therapy to visitors. Interpret the aims of a physical therapy service formally and informally to interested groups; e.g., orientation of new staff or providing a prospective student with a view of an operating clinic.

163 CONSULTS

An exchange of ideas or information with professional personnel regarding the patient's treatment plan, progress, etc. Includes exchanging ideas with another staff member concerning methodological points of good practice, general professional opinion(s), etc.

170 DIRECTS

To make decisions on a higher level, such as a supervisor of a department might do, and to relay such decisions or advice to staff therapists; e.g., to explain hospital policy to staff, indicate major actions that are to be taken such as work assignments, attend departmental or hospital planning-policy budgeting meetings, etc.

199 OTHER

Enter description under COMMENTS.

999 TRAVELS

Time spent by personnel out of department to get to clinics, bedside, etc. Does *not* include time personnel takes to go to get a patient to bring to department (see TRANSPORT P).

(Data)

210 COPIES

Type handwritten reports and notes.

Transfer information from one sheet of paper or form to another.

Change the format of a block of data.

220 RECORDS

Making notation in specific forms of evaluation findings; such as amputee intake, checkout forms, electrodiagnosis forms, charge sheets, attendance forms and appointment forms.

Check inventory as in maintaining linen supply, requisitioning supplies, etc.

230 READS

Read chart, texts or directives for information.

240 WRITES

Write home instructions, statistical or narrative reports and progress notes.

250 PLANS

Plan exercise or treatment program.

Calculate increments of ultraviolet treatment time.

Plan organization of department (e.g., budget, staff policies and procedures).

299 OTHER

Enter description under COMMENTS.

(Things)

310 PREPARES T

(Note: Equipment oriented activities that can be done *before* the patient is present.)

Fill Hubbard tank.

Take out and have equipment at hand for treatment.

Warm lubricant for massage.

Soaking electrodes in water.

Select necessary crutches and accessories (tips, axillary pads, hand grips).

Turn on and warm up infrared, paraffin, microwave or diathermy machine.

Prepare water basin for underwater ultrasound.

Plug in heating unit for hot packs.

Includes such follow-up activities of treatment as replacing hot pack in tank, emptying and cleaning Hubbard tank, cleaning paraffin and replacing in tank.

Bandaging, adhesive strapping, sterile dressing.

Maintaining hygienic conditions by removing-collecting trash barrels, scrubbing walls and floors, changing sheets, etc.

311 TRANSPORTS T

Transportation of any supplies or equipment to and from the department.

320 OPERATES

(Note: hands on equipment-oriented activities)

Spreading coupling agent over US sound head and part to be treated.

Put electrode pads in contact with patient.

Administer iontophoresis.

Operate active electrodes, ultra sound machine or diathermy machine.

Open and close shutters of UV lamp.

Operate cervical or lumbar traction apparatus (including turning it on).

330 CONSTRUCTS

Make UV Sensitivity Tester, or simple devices for exercise.

340 ADJUSTS

A second time operation to change what has been done in setting up.

Checking water temperature at frequent intervals to make sure it is maintained.

Adjust cervical or lumbar traction apparatus.

Choosing ideal current for stimulation.

Rechecking electrical apparatus if no or poor response occurs.

Regulate diathermy dosage by comfortable sensation of warmth.

Finding 10 Repetition Maximum or Minimum in P.R.E.

Check straps on DeLorme boot.

Checks exercise equipment for ability to withstand stress.

Adding stump socks to improve fit.

Checking prosthesis straps.

Adjusts length of cane, crutches or other walking aids.

350 SET-UPS

(Note: Equipment oriented activities that can only be done with patient present.)

Determine distance between infra-red (IR) source and patient.

Cover hot pack with 6–7 thicknesses of towel.

Space microwave director.

Put on DeLorme boot wall pulley anklet.

Turning on time for treatment.

Check thermometer temperature of paraffin or water.

Fit collar for cervical or harness for lumbar traction apparatus.

Set output range (microwave, diathermy).

Placing diathermy electrodes and checking treatment area for safety hazards (includes placing adequate spacing, etc.)

Placing diathermy inductance cables or contour applicator.

Preparing body part before ulcer treatment with UV by protecting surrounding skin with vaseline and cloth dressing, and cleansing ulcer with H_2O_2.

Test polarity of poles before applying electrostimulation.

Raise/lower parallel bars to an appropriate height.

360 APPLIES

Brushing paraffin on body parts, or dip body part in paraffin, wrapping part to preserve heat.

Putting on cold compresses, immersing body part in contrast baths, wrapping in wet pack.

Placing hot pack on area to be treated.

Brushing, and quick icing as in the Rood method.

399 OTHER

Enter description under COMMENTS.

OBJECT(S)

(People)

100 ACTION OR TECHNIQUE

A therapeutic method or procedure peculiar to P.T. (other than those listed below).

Enter description under COMMENTS.

110 EXERCISES

Bodily movements designed to correct an impairment, improve musculoskeletal function or maintain a state of well-being. This is a broad term (BT) and used only when a more specific description is unavailable from 11-119 inclusive, e.g., Passive ROM (mode 46).

111 BREATHING

A specific variety of exercises designed to strengthen respiratory muscles, increase vital capacity and generally improve ventilation capabilities.

112 MUSCLE RE-EDUCATION

Coordination exercises characterized as a set of discrete controlling movements under the direct consciousness of the patient designed to improve the smooth patterns of multiple muscle usage seen under normal conditions. Usually requires SUPERVISION (161) action.

Or, neuromuscular re-education of a single muscle as well as activities of a combination of a number of muscles by providing some specialized stimulus to elicit required responses, e.g., PNF techniques. Usually requires HANDLING (131) action.

113 RELAXATION

The effective reversal of the secondary effects of anxiety through patient awareness of muscular tensions and knowledge of their control and inhibition.

114 STRENGTHENING (general)

Improvement of the ability to carry on physical activity over time and an increase in general physical capacity. Included in this category would be, e.g., general or graded daily activities for cardiac or orthopedic conditions. Does not include highly *regimented* procedures that employ weights, e.g., the DeLorme boot, wall pulleys (see SPECIFIC STRENGTHENING (119) OBJECT).

115 BALANCING

Challenge of equilibrium in various progressively unstable positions–sitting, standing, hopping, etc.

116 AMBULATION

The process of moving and walking about, synonymous with gait training and locomotion.

117 DEVELOPMENTAL

Exercises which recapitulate lower stages in motor ability in order to prepare patient to perform higher stages.

118 POSTURE

Exercises for low back and abdominals plus practice in correct posture by a wall, in front of a mirror, maintaining this posture during various A.D.L.

119 SPECIFIC STRENGHENING

Primarily progressive resistance and other specific regimented exercises using weights, and DeLorme system of 10 REPETITION MAXIMUM which aim at an increase in the power of specific muscle groups (use action verb [161] SUPERVISING). May include manual resistance where use of equipment is inconvenient or inappropriate.

ACTIVE ASSISTIVE procedures are also in this category but require action verb (131) HANDLING.

120 FIRST AID

Emergency treatment for injury or sudden illness before regular medical care is available.

130 POSITIONING

Body positions (both those to be used and those to be avoided) and frequency based on individual patient needs but generalized according to disabilities associated with muscle weakness or joint deformity. Includes the theory and practice of using equipment such as rolls, sandbags and pillows (not actual use of).

140 BANDAGING

The use of muslin, gauze, or elasticized material for the purpose of protection or compressing a part, for retention of dressings upon wounds, for support, or for restriction of motion.

150 TRANSPORTATION

Use of wheelchair, car, bus, all traveling activities which do not constitute ambulation.

Exiting from the P.T. Clinic.

160 SELF-CARE

Includes (a) *usual* hygiene activities made difficult by disability, e.g., washing, teeth brushing, etc., (b) bladder and bowel control, (c) stump care (with amputee, including skin cleansing, care of socket, socks and bandages), (d) dressing, (e) eating activities, and (f) transfer activities.

170 PATIENT RESPONSE

The condition of the patient following or during treatment compared with pre-treatment condition. Includes vital signs such as pulse, respiration and blood pressure.

180 PROFESSIONAL

General category of duties which do not fall under specific treatment techniques but which are directly related to services of the physical therapist, e.g., establishing rapport, giving reassurance.

Enter description under COMMENTS.

199 OTHER

Enter description under COMMENTS.

(Data)

200 PROGRESS NOTES

Information written, dated, and signed by the physical therapist, entered in other than the patient's medical chart (e.g., data kept on file in the department). These data may include patient's progress (or lack of it), symptoms noted, changes made in treatment plans, equipment used, and any subsequent evaluations.

201 INITIAL (note)

The note which includes patient's identifying information, initial evaluation, treatment plan and objectives.

202 FINAL NOTE

Includes summary of treatment including its reason for termination.

210 REPORT

Information on the service as a whole for the purpose of evaluating results, indicating future trends, and developing new methods.

211 STATISTICAL

Includes basic data needed for budgeting, for establishing service charges, for planning staff, space, and equipment changes.

212 NARRATIVE

Is a record of the historical continuity of the physical therapy service, including coordination of physical therapy with other services, staff teaching, community or other special activities, additions or reductions in staff, new equipment, and goals for the future.

220 RECORDS

An account in writing or check list of facts necessary to budgeting, scheduling or other administrative problems as well as treatment within a physical therapy service.

221 ATTENDANCE

List of patient—date and often time spent in treatment.

222 APPOINTMENT

Includes date and time on which patient is to receive treatment.

223 MEDICAL CHART

The facility's (e.g., hospital's) primary record of the patient's medical history and course of treatment.

230 MESSAGE

Telephone, verbal, or written communication.

240 TREATMENT PROGRAM

A plan of action for the care of the patient while receiving physical therapy services.

250 INVENTORY

Itemized list or catalog of equipment or supplies which may be so listed.

260 EVALUATION FORM

Includes forms for muscle tests, range of joint motion, functional activities, electrodiagnosis, pre-prosthetic, and check-out.

270 INSTRUCTIONS

Any directions or orders for continued treatment, as for example in the home, which usually goes with action verb (162) TEACHING.

Directions for some job to be completed, e.g., to an Aide is usually action verb (141) COMMUNICATES.

299 OTHER

Enter description under COMMENTS.

(Things)

310 EQUIPMENT

Mechanical aids which are used in treatment. For example, gymnastic aids to exercise, such as pulleys, weights, cuffs, trapezes, wands, balls, bicycles, restorator, shoulder wheel, finger ladder, etc. Also current as well as thermal devices for application of heat to the body. Includes diathermy, whirlpools, ultrasound, hot packs, paraffin.

Includes orientation to the theory and practices of applying, maintaining and operating any mechanical aid used in/for treatment.

320 PROSTHESIS

An artificial substitute for a missing limb or part of a limb.

330 ADJUNCT

Substance applied to the body, such as ice, wax, or ionic solution used in iontophoresis, which cannot be considered mechanical.

340 BANDAGE

A strip of cloth, of muslin, gauze, or elasticized material used to protect or support a body part.

350 ASSISTIVE DEVICE

Those aids to self-care and activities of daily living not included in 351-354.

351 BRACE

Devices to support the body, prevent and correct deformity, and control involuntary movements of persons disabled in lower extremities and/or trunk. Includes short leg, long leg, spinal, and Milwaukee braces.

352 CRUTCH

An aid to walking held in the hand and also held underarm. Also includes Canadian crutches which give support above the elbows but do not extend into the axilla.

353 WALKER

An aid to walking gripped in both hands having four legs or bases of support.

354 CANE

An aid to walking which is gripped in one hand.

355 WHEELCHAIR

A chairlike device which rests on two or more wheels and is propelled by pushing on the latter or through the assistance of a second person.

360 PHYSICAL PLANT

Includes all of the physical structure and contents of the Physical Therapy Service that have not been enumerated, e.g., trash barrels, beds, tables, chairs, walls, desk, floors, etc.

399 OTHER

Enter description under COMMENTS.

PERSON

100 PATIENT

Persons receiving treatment in the physical therapy service.

010 PT - AIDE

Includes situations where a physical therapist must have at least one lesser trained helper, as in lifting a heavy patient.

011 AIDE

Includes situations where the staff member has a low level helper in doing some part of the task where it is not a necessity but rather a saving in time and convenience for the therapist. In this case add PATIENT CODE (100) to this code to get 111. If *no* patient is present, use 011 as the code.

012 PT - PT

Includes situations where a physical therapist must have the assistance of another therapist, as in highly technical procedures.

013 PT

Includes situations where a physical therapist does not require another therapist to aid her but where it is a saving in time and convenience to do so. In this case add PATIENT CODE (100) to this code to get 113. If *no* patient present, use 013.

013 STUDENT

An individual who is formally enrolled in a program of study which results in certification as a physical therapist.

015 AIDE - AIDE

Includes situations where an aide must have the assistance of another aide because of the technical or physical requirements of the task to be completed.

016 ASSISTANT

Includes situations where the staff member has an ASSISTANT (middle level, trained helper) doing some part of the task where it is not a necessity but rather a saving in time and convenience for the therapist. When the task involves a patient add PATIENT CODE (100) to this code to get 116. If no patient is present, use 016 as the code.

017 PT – ASSISTANT

Includes situations where a physical therapist must have an assistant helping her because of the technical requirements of the task.

018 ASSISTANT – ASSISTANT

Includes situations where an assistant must have another assistant present because of the technical requirements of the task.

019 ASSISTANT – AIDE

Includes situations where the assistant must have an aide present because of the requirements of the tasks to be completed.

020 PHYSICIAN

A person with medical degree or medical student responsible for patient care.

021 NURSE

A person who is a registered or licensed practical nurse or student nurse responsible for the care of the patient.

022 OCCUPATIONAL THERAPIST

Trained and registered professional who treats mental and physical ailments by work designed to divert the mind or to correct a particular physical defect.

023 OTHER HEALTH-RELATED PERSONNEL
Includes speech therapists, psychologists, and other personnel with whom the therapist might work to correct a disability.

030 CLERICAL
Person employed in record keeping which does not require professional judgment.

031 RECEPTIONIST
Person employed to receive callers, make appointments, give information, etc.

032 SECRETARY
Person employed to keep records, take care of correspondence and other writing tasks.

040 RELATIVE
A member of the family of the patient (or any individual close to the patient and involved in his physical care).

060 ALONE
Denotes that the staff member being observed is doing the task without aid and that she is not doing any task to or for another person.

099 OTHER
Enter description under COMMENTS.

MODE

01 THERMOTHERAPY
Therapeutic use of heat or cold other than with water media.

02 CRYOTHERAPY
The therapeutic use of cold.

03 DIATHERMY
Microwave—the heating of body tissues by passing a high frequency electrical current through a part of the body.

05 HOT PACK
Use of a fabric envelope containing silica gel which when immersed and heated in hot water becomes a hot, moist compress.

06 INFRARED (and radiant heat)
Transmission of heat through the air to the patient from a radiating source in the infrared (and luminous) portion of the spectrum.

07 PARAFFIN
The use of melted paraffin for therapeutic heat.

08 ULTRASOUND
The use of sonic waves above those audible for the purpose of therapeutic heating and mechanical efforts.

09 ULTRAVIOLET
The use of radiation traveling through the air from a radiating source in the ultraviolet portion of the spectrum.

10 HYDROTHERAPY
The use of water in any of its three forms, solid, liquid, or vapor, internally or externally, in the treatment of disease or trauma.

11 CONTRAST BATH
Alternating hot and cold baths.

12 HUBBARD TANK

Use of a specially constructed full-immersion tub with turbine for administering underwater exercises with neutral or mild heat application.

13 WHIRLPOOL

Use of a partial immersion bath in which water is agitated.

20 EVALUATION

An objective test or measurement performed on the patient.

21 R.O.M.

A test of joint range of motion.

22 M.M.T.

A manual muscle testing, grading, and plotting results of the active muscle strength of an individual.

23 ELECTRODIAGNOSIS

The determination of functional states of various organs and tissues according to their response to electrical stimulation.

30 INSTRUCTION

Knowledge, information, etc. given or taught to aid in the patient's motor capabilities.

31 GENERAL EXERCISE

Strengthening exercises to overcome problems of general weakness rather than of a specific pathology.

32 THERAPEUTIC EXERCISE

The teaching of movements to overcome the disabling results of a specific pathology.

33 GAIT TRAINING

Ambulation utilizing parallel bars, crutches, walkers, canes, braces, manual assistance, or independent ambulation. Includes stair climbing.

34 A.D.L.

The teaching of such functional activities as transferring from bed to chair, and other self-care skills.

35 AMPUTEE

The teaching program of the amputee including bandaging, hygiene, therapeutic and general exercise, gait training, care and utilization of the prosthesis, and activities of daily living.

40 OTHER MEDICAL

Those modalities not concerned with application of heat, water, instruction, or evaluation.

41 TRACTION

The use of mechanical pressure to increase the intervertebral spaces and thus relieve compression of spinal nerve roots and muscle spasm.

42 ELECTRICAL STIMULATION

The use of faradic and galvanic currents to stimulate denervated muscles and atonic muscles having intact nerve supply. Includes methods of iontophoresis.

43 POSTURAL DRAINAGE

Positioning to drain particular segments of the lung in respiratory disease, followed by manual clapping and vibration to facilitate productive coughing.

44 TILT TABLE

Use of a table on which patient is strapped and tilted to any angle up to 80 degrees to increase tolerance to standing, promote urinary drainage, and prevent contractures.

45 MASSAGE

Includes general massage to improve circulation and accomplish relaxation, massage of specific muscle groups in treating local injury or diseased areas, and friction massage of scars and adhesions.

46 PASSIVE EXERCISE

Manipulation of various bodily joints through a range of motion without active participation on the part of the patient.

50 CLERICAL

Tasks of record-keeping which do not require a professional physical therapist, such as secretarial and receptionist duties.

60 PROFESSIONAL

Tasks which pertain to the profession of physical therapy without being related to direct patient treatment modalities.

99 OTHER

Enter description under COMMENTS.

TASK LEVEL

1 REGISTERED PHYSICAL THERAPIST

A graduate of an approved university training program and/or registered with the American Physical Therapy Association.

2 ASSISTANT +

An experienced Assistant (cf.3)

3 ASSISTANT

A skilled helper who has graduated from a university or college training program of unspecified length and content.

4 AIDE +

An experienced aide (cf.5)

5 AIDE

A non-medically oriented operative who has received brief on-the-job training.

APPENDIX III

TEST

PT Observation Schedule

Code

I. ACTION

—— Rotate head to facilitate the tonic neck reflex.

—— Answer and refer telephone calls.

—— Put on cold compresses, immersing body part in contrast baths, wrapping in wet pack.

—— Going to in-service lectures or other inter- and intra-departmental meetings.

—— Transfer to treatment table or dry stretcher for dressing.
—— Lessen amount of traction, if patient complains of pain.
—— Convey information about techniques of hygiene.
—— Elicit neuromuscular responses.
—— Check exercise equipment for ability to withstand stress.
—— Exchange information with professional personnel regarding the patient's progress.
—— Relay departmental decisions or advice to staff therapists.
—— Help to hold or move a heavy person or object.
—— Clean and dry body part before applying paraffin.
—— Walk to General Clinic.
—— Passive range of motion exercising.
—— Brush, and quick ice as in the Rood method.
—— Rood's method of positioning.
—— Describe treatment about to be given.
—— Transfer information from one form to another.
—— Take portable treatment equipment to ward.
—— Review chart, texts or directives for information.
—— Provide treatment to one patient while acting as a monitor for another.
—— Draft progress notes.
—— Open and close shutters of UV lamp.
—— Add stump socks to improve fit.
—— Convey information about techniques of balance.
—— Clean paraffin and replace in tank.
—— Put walking belt on.
—— Turn on timer for treatment.
—— Do R.O.M. by gonimetry and eyeballing.
—— Devise exercise or treatment program.
—— Warm lubricant for massage.
—— Fit collar, use cervical or lumbar traction apparatus.
—— Check strength-duration curve.
—— Test polarity of poles before applying electrostimulation.

-- Observe and remind patient of certain actions that must be done.

II. OBJECT

-- Retention of dressings upon wounds, for support, or for restriction of motion.

-- Aids to self-care and activities of daily living other than braces, crutches, walker, and cane.

-- How to use rolls, sandbags and pillows.

-- Pre-printed records for muscle tests, range of joint motion, functional activities, electro-diagnosis, pre-prosthetic and check out.

-- Gait training.

-- Prepare patient to perform higher stages in motor ability.

-- Increase in the power of specific muscle groups.

-- Bladder and bowel control.

-- General or graded daily activities for cardiac and orthopedic conditions.

-- Vital signs such as pulse, respiration, blood pressure.

-- Improve the smooth patterns of multiple muscle usage seen under normal conditions.

-- Therapist activities which establish rapport or give reassurance.

-- The notes which include patient's identifying information, initial evaluation, treatment plan, and objectives.

-- Exercises designed to increase vital capacity.

-- Summary of treatment including its reason for termination.

-- Description of additions or reductions in staff, new equipment, and goals for the future.

-- Movements designed to strengthen respiratory muscles.

-- Date and time which patient is to receive treatment.

-- Devices to control involuntary movements of persons disabled in lower extremities and/or trunk.

-- Telephone, verbal, or written communication to be passed on to another.

-- Orientation to the theory and practice of applying, maintaining and operating any mechanical aid used in/for treatment.

III. PERSON

—— Situations where a physical therapist must have the assistance of another PT, as in a highly technical procedure, but with no patient present.

—— Includes situations where a physical therapist does not require another therapist to aid her but where it is a saving in time and convenience to do so. *No* patient present.

—— Situations where the PT has a low level helper doing some part of the task where it is not a necessity but rather a saving in time and convenience for the therapist, e.g., moving the patient to the parallel bars.

—— Situations where a physical therapist must have at least one lesser trained helper to assist in serving a patient.

—— Situations where a PT has a low-level helper doing some part of the task where it is not a necessity but rather a saving in time and convenience for the therapist, e.g., adjusting parallel bars before patient arrives in clinic.

—— Situations where a physical therapist must have at least one lesser trained helper, e.g., setting up equipment.

—— Situations where a physical therapist must have the assistance of another therapist in a highly technical procedure with a patient present.

IV. MODALITY

—— Therapeutic use of heat or cold other than with water media.

—— Iontophoresis methods.

—— The teaching of movements to overcome the disabling results of a specific pathology.

—— Tasks which pertain to the field of physical therapy without being related to direct patient treatment modalities.

—— Training in stair climbing.

—— Tasks of record-keeping which do not require a professional physical therapist.

—— Knowledge, information, etc. given or taught to aid in developing the patients' motor capabilities.

—— A test of joint range of motion.

—— Strengthening exercises to overcome problems of general weakness rather than of a specific pathology.

-- An objective test or measurement performed on the patient.

-- The use of radiation traveling through the air from a radiating source in the ultraviolet portion of the spectrum.

-- Transmission of heat through the air to the patient from a radiating source in the infrared (and luminous) portion of the spectrum.

-- The use of mechanical pressure to increase the intervertebral spaces and thus relieve compression of spinal nerve roots and muscle spasm.

-- The use of water in any of its three forms, solid, liquid, or vapor, internally or externally, in the treatment of disease or trauma.

-- Microwave—the heating of body tissues by passing a high frequency electrical current through a part of the body.

APPENDIX IV

Date Nov.	Day	Time Schedule	Time Actual	Observer Schedule	Observer Actual	Staff Member Schedule	Staff Member Actual
10	M	8	(8:12)*	3		3	(1)
		1	(1:30)	4		7	
11	T	10	(8:00)	1		2	(7)
		3		2		6	
12	W	8	(10:00)	1		6	(2)
		1		4		1	
13	Th	10		3		2	(1)
		1		2		6	
14	F	8		1		3	(6)
		3		4		7	
17	M	10		1		4	
		3		2		8	
18	T	10		3		5	
		1		4		9	
19	W	10		3		6	
		3		2	(4)	1	(2)
20	Th	8		1		7	
		3		4	(2)	2	(1)
21	F	8	(9:00)	1		8	
		1		4		3	
24	M	8		1		1	
		1	(1:30)	2		4	
25	T	8		1		7	
		3		4		5	
26	W	8	(8:07)	3		8	
		1		4		5	

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APPENDIX IV (continued)

Dec.							
1	M	8	(8:05)	3		1	(6)
		1		4		6	(1)
2	T	10		1		2	
		1	(3:00)	2	(4)	7	(8)
3	W	10		1		3	
		3		4		8	(9)
4	Th	8		1		4	
		3	(1:00)	4	(2)	9	(7)
5	F	8	(8:09)	3		5	(7)
		1	(1:50)	2		1	
8	M	10		3		6	
		1		4		2	
9	T	10		1		1	
		3		4		3	
10	W	8		1		2	
		1	(3:00)	4		4	(7)
11	Th	10		1		3	
		3		2		3	(8)
12	F	10		3		4	(1)
		3		2		4	(5)
15	M	10	(8:00)	1		5	(7)
		3	(1:00)	4		5	(4)
16	T	8		3		6	(4)
		3		2	(4)	6	(3)
17	W	8	(10:00)	1		7	(5)
		1	(3:00)	2	(4)	7	(5)
18	Th	8		3		8	(5)
		1		4		8	(1)
19	F	10		1		4	
		1		4		9	

* Numbers in parentheses indicate the changes made in the schedule. All other observations were conducted as scheduled.

APPENDIX V

PHYSICAL THERAPY SERVICE STUDY

	ID No.	POSITION	SOCIAL SECURITY NUMBER
1.	S. Bell	PT	146-36-4287
2.	C. Terry	Aide	261-62-7359
3.	J. Magarian	PT	267-78-0495
4.	K. Strickland	PT	200-34-5859
5.	I. McPherson	Aide	263-66-9407
6.	M. Wroe	Director, PT	406-36-8584
7.	W. Townsend	Aide	266-34-3231
8.	G. Lumbard	PT	488-48-3270
9.	M. Kapicak	PT	237-80-1907

Plan for Substituting Staff

If the person to be observed is not at work on the assigned day:

a. find that person's ID number (above).
b. add a factor number from the *top* of the list to it.
c. use the rightmost (units) digit to determine the new person to be observed (i.e., look it up in the list). If this new person is unavailable for some reason (e.g., absent or works part-time) merely cross off the used factor number and use the next one, etc. until a new staff member is selected.
d. cross off used factor number.

FACTOR NUMBERS
7
5
8
3
5
1
5
6
8
8
3
7
7
4
4

OBSERVER-INVESTIGATORS

1. Bowman
2. Chambers
3. Kapicak
4. Nelson

In emergencies call:

Dr. Muthard — 392-3001 (Office)
378-6284 (Home)

Dr. Dumas — 392-3001 (Office)
378-1109 (Home)

University of Florida

Rehabilitation Research Monographs

*1. Client Motivation for Rehabilitation: A Review.
2. Characteristics of Students in the Health Related Professions.
3. Six Years of Rehabilitation Research: Studies of Personnel In Health Related Professions, Client Motivation and Research Utilization.

Other Publications

*1. Report and Articles Resulting from Research and Demonstration Projects: A Bibliography.
*2. A Guide to Recent Operations Research, Computer, Management, Business and Other Technical Literature for Rehabilitation Personnel: 1,000 Abstracts.
3. A KWIC—Keyword in Context—Index of Selected Rehabilitation Counseling Literature.
4. The Decision Maker's Guide to Applied Planning, Administration, Research, Evaluation and Analysis Techniques.
5. Research Utilization and Dissemination (Conference Proceedings).

* Titles preceded by an asterisk are out of print. Single copies of other monographs and publications are available without charge from the following address:

Regional Rehabilitation Research Institute
Box 208, Health Center
University of Florida
Gainesville, Florida 32601